A Third Lecture
ON
UNICELLULA CANCRI:
THE PARASITE OF CANCER.

BY
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III.—THE WORKING THEORY OF CANCER FOUNDED ON THE TWO PREVIOUS LECTURES.

WHEN I was a young man there were a good many surgeons attached to the hospitals in London who spoke of themselves as "practical surgeons." They not only exhibited no interest in pathology and in the scientific problems connected with their trade of surgeon, but they held such things in scorn and laughed at those who did pursue them. To them surgery consisted in the diagnosis of disease and in the treatment of it, particularly by operation. They prided themselves—often quite justly—on their neatness, skill, and boldness. They sometimes heard it stated that pathology is the foundation of surgery. But the statement had no meaning in their ears, and they seldom gave themselves the trouble to discuss it or even to consider it.

Practical surgeons may still exist, but they are not now in evidence as they used to be. They no longer make a boast of their ignorance of pathology and the scientific side of surgery, and now it is rather the fashion to admit that pathology is the foundation of medicine and surgery. It is a good sound principle; rather an abstract proposition than a practical suggestion. It is only the weak and unpractical men who allow themselves to be influenced in their diagnosis and treatment of a disease or accident by the views of its pathology which happen to prevail at the moment.

As a matter of fact, I am sure that physicians and surgeons, scientific or practical, are always to some extent influenced in their diagnosis and treatment of accident and disease by the idea which they have in their minds of the nature—in other words, the pathology—of the disease. But few persons are conscious of the extent to which they may be, and often are, influenced by the pathology of the day in relation to a particular disease. To illustrate this statement, I shall take the single example of cancer and of the influence of the pathology of the day on the treatment of cancer as I have actually myself known it.

THE HUMORAL AND THE LOCAL THEORIES OF CANCER.

In the course of the last sixty years two great theories of cancer have held the field: the *humoral* theory and the *local* theory. (I am not, of course, speaking of minor theories, of the parasitic origin of cancer, etc., which have sprung up later; but solely of the two great theories of cancer which were discussed by pathologists and scientific surgeons in all countries.) Was cancer in its early stages a local disease, which became constitutional as it advanced? Or was it from the beginning due to an unsound state of the blood?

I do not know how long the humoral theory had received the support of the scientific surgical world, nor do I know who was responsible for it in the first instance. It was maintained by Mr. Paget, in his lectures on Tumour at the Royal College of Surgeons, just over sixty years ago. My copy of his Lectures (1853) is, I believe, the first edition. Two or three extracts from it will suffice to state his views.

> For the present I will say only that I think malignant tumours are local manifestations of some specific morbid states of the blood; . . .[1] The general history of cancers and their analogy with other diseases that are, in the same senses, specific and constitutional, imply that, before the formation of a cancerous growth, two things at least must co-exist—namely, a certain morbid material in the blood, and some part appropriate to be the seat of a growth incorporating that material, some place in which the morbid material may assume, or enter into, organic structure.[2]

This was the pathology of cancer which was taught at St. Bartholomew's Hospital when I became a student in the middle Sixties. Such were the reputation and eloquence of our great master that, if his views had differed from those of all other pathologists, he would have carried with him a large body of disciples. But they were the generally accepted views, and he happened to be one of the greatest exponents of them.

Now, see the pernicious influence of them on the treatment of cancer. I again quote from the lectures. Mr. Paget did not deal with the general question of operations for cancer, but he discussed the question of operation against cancer of the breast. For the study of the results of operations, he took two series of cases of scirrhus cancer. The first was a series of 66 cases in which no operation was performed. Of this series, he says: "The average duration of life, from the patient's first observation of the disease, is a little more than four years."* The second was a series of "47 cases, in which the cancer was once or more removed by operation, the average duration of life, after the first observation of the disease, was again something more than forty-nine months."[4] And, to leave no doubt regarding his opinion of the value of operation, he says, a few pages further on:

> In deciding for or against the removal of a cancerous breast, in any single case, we may, I think, dismiss all hope that the operation will be a final remedy for the disease. I will not say that such a thing is impossible; but it is so highly improbable, that a hope of its occurring in any single case cannot be reasonably entertained.[5]

Under this pessimistic pathology the most that was ever expected from an operation was that the patient might die a little less miserably. The disease was often advanced before it was removed; the operation was quite inadequate; the objects of the surgeon were to obtain an immediate good result of his operation and to prevent recurrence *in situ*. But his operation was seldom wide enough to secure the second object. There was no hope, either for the present or the future. To the very end of their surgical lives, many surgeons of the surgical generation before my own, such men as Sir Thomas Smith, were under the influence of these views, and I have heard the expression many times: "Once cancer, always cancer."

I do not remember when or where or how the theory of the *local* origin of cancer came before the pathologists and surgeons, or whether it was a British or a Continental inspiration. It was a very happy inspiration, and humanity has occasion to be very thankful for it. I have no recollection of discussing it and suddenly being struck with the belief that it was true. Probably, conversion came slowly, from the more careful study of individual cases of cancer and from the slow discovery that operations were more successful than they had been believed to be. I can well remember occasionally drawing the attention of members of the permanent staff (when I was Surgical Registrar to the Hospital, and working at the Pathological Society) to such successful cases. The reply was always: "Well, you may be sure it was not a case of cancer"! And, if the microscopical examination was adduced in proof of cancer, incredulity was expressed, which was by no means flattering to a young pathologist. The principle on which the results of operations for reputed cancer were regarded by the humoral pathologists was simple and ready of application; if removal of a cancer were followed by recurrence and death, there was no doubt of the correctness of the diagnosis; if there was no recurrence, and the patient lived and remained sound, it was because the disease was not cancer, whatever the microscopist might say.

I suppose the steady accumulation of observations, supported by more experienced microscopists, and the more careful recording of cases of cancer were the chief circumstances which shook the humoral theory of cancer. There were, too, certain weak points in the armour of its advocates. Thus, Mr. Paget had been obliged to admit in his lectures on Epithelial Cancer, "that in some cases permanent recovery and in some a long period of health follows their removal." †

Gradually belief in the curability of cancer was established. Hope was infused into the minds of surgeons and their patients. Operations for cancer were better planned; they were far better performed than they

* About forty-nine months.

† Loc. cit., p. 474. It is very important that a few pages further on—p. 478—he collects "from the facts of this lecture the grounds which seem to justify the inclusion of this disease under the name of 'cancer.'"

had been; they were performed at a much earlier period of the disease; and, thanks to the discovery of antiseptic surgery, they were performed with much less distress and danger to the patient; until, in these later years, operations for cancer have been extended far beyond the limits they were formerly intended to observe, and, I am afraid, sometimes beyond the limits which prudence and a better knowledge of pathology would justify.

It must not be imagined that all this was accomplished without a great deal of opposition, or that it was carried through in the course of a few years. Even when it was evident that the humoral theory, even in the strict sense of the humoral pathologists sixty years ago, could no longer be maintained it was by no means abandoned. The old humoral pathologists and those who would not admit the local origin of cancer, spoke of the constitutional origin of cancer; and discussions took place and battle was waged, with varying success, by the adherents of the two theories, and would probably still be waging had not the question been definitely settled by experimental investigation by our own and other cancer research associations in the course of the last ten years.

Since then the local origin of cancer holds the field. The object of the surgeon is to remove it early, while it still remains a local disease. He may remove the tumour alone, with a more or less wide area of the tissues outside, into which the cancer cells may have escaped; and he may extend his operation to the associated lymphatic glands, whether they are obviously cancerous or not, provided experience has taught him that they are liable to become cancerous. His working theory is plain and simple: it is to remove the whole of the existing disease—in fact, to get all the cancer cells out of the body of his patient. If he can do this, the patient will be cured.

In spite of errors of judgement, of ignorance of the special pathology of cancer of different parts of the body, of faulty application of operations, and of all the pitfalls which attend the steps of even the most prudent and accomplished surgeons in the exploration of new fields of operative surgery, the advantages which have been gained for cancerous persons by the institution of a good working theory of cancer for a bad one are greater than the mind of man could have conceived. So far as the surgery of cancer is concerned, I was reared by pessimists, and lived in their society and held their views, and was myself for some time a fatalist on the subject of cancer. For some years past I have been living in the society of optimists, to the formation of which I did contribute, though but a small part. Their enthusiasm seems to know no bounds; and the optimism of some of them is so great that I verily believe they regard every variety of cancer as curable by operation, provided the operation be sufficient and the disease is in an early stage. However, it is a much better atmosphere than the other, good both for the surgeon and the patient, and I do not complain of it.

Working Theory.

My theory is neither *Local* nor *Humoral:* it is probably first *Local* and secondly *Constitutional.*

1. It is *Local* in so far that our belief is now well founded that spontaneous cancer is, at its commencement, a local condition. If we turn our backs upon the question of its origin, and regard it just as we find it in the body, it is to all intents in exactly the same relation to the host as most micro-organisms which have entered the body from without, and which are fitted to live in it. Cut it freely out, just as a primary syphilitic sore is sometimes cut off the prepuce, or a little tuberculous sore is cut out of the tongue or tip of a finger, and, if the micro-organism which each of the three primary lesions contains is limited to the lesion, the attack will be cured by the operation. The host may suffer from subsequent attacks of the same nature, but that particular attack is cured. The operation is frequently successful in tubercle, frequently in cancer, less frequently probably in syphilis.

2. *Constitutional.*—But if the micro-organism has already begun to travel (migrate), the disease can no longer be considered to be *Local.* In each case the micro-organism has broken bounds, and may reach some part of the body in which it can live and multiply. It may reach some place where it may still be cut out with success. This is particularly the case with the glandular affections of tubercle and cancer; so little the case with syphilis that it is rarely tried.

In most cases of all three diseases the surgeon abandons the attempt to cure by removal, and the only hope lies in the resistance of the patient, assisted by medicine and other remedies. For syphilis, the results are, in percentage, exceedingly good; many patients are cured and the spirochaete dies or is destroyed. For tubercle they are not bad. Fresh air, fit food, cleanliness, tonics, cod-liver oil, and tuberculin cure many patients. The tubercle bacillus dies or is destroyed. For cancer the case is very different. We have no specific medicine for cancer, no general measures (such as we use in tubercle) in which we place the least confidence. The cancer cell is not habitually influenced (or likely to be killed) by drugs, or inoculations, or diet, or air, or by any known treatment. When once, therefore, the cancer cell has broken bounds, the fate of the patient might be regarded as sealed and all hope lost.

Practically, this view prevailed until recently, but it is largely modified by our better knowledge of cancer, particularly that which depends on experimental investigation.

Why Cancer Cells which have Broken Bounds do not always Kill.

But cancer cells which have broken bounds do not always kill. Some, such as those of rodent ulcer and recurring fibrous sarcomata, are quite incapable of living and multiplying in other organs and tissues than those in which or in the vicinity of which the disease first appeared. Others may be so feeble that they are not able to live and multiply, even in those tissues and organs which are generally suitable to the needs of this particular variety of cancer cell. Or the resistance of the host may be so strong that the migrating cancer cells are not able to overcome it.

These are not mere matters of conjecture. Experimental investigation* has established them beyond dispute. We have learnt that cancer cells of the same variety are not all possessed of equal vigour, and that the resistance of different hosts varies within very wide limits.

Further, clinical observation has taught us that an attack of cancer may be severe or mild, like the attacks of so many other diseases. I do not mean than one variety of cancer is more fatal than another—spindle-celled sarcoma, for instance, than rodent ulcer; or that the same variety of cancer is much more fatal in one part of the body than another—squamous carcinoma of the tongue, for example, than squamous carcinoma of the lower lip or scrotum; but that two cases of the same variety of cancer in the same part of the body may vary enormously in their severity. Take, for example, two cases of spheroidal carcinoma of the breast in women of the same age. In the one case the tumour will grow four times as fast as in the other case, the glands will be early affected, and the case will run its course in a year or eighteen months. In the other case the tumour grows so slowly that it is still quite small at the end of four years, the glands are not affected, there is no distant metastasis, and the patient is not aware that she is suffering from a serious disease.

These differences have been well known for many years, and have been attributed to various causes. Now we should certainly ascribe them to difference in vigour of the cancer cell in the two cases, and to difference in the resisting power of the tissues of the two hosts. How much is to be ascribed to each of these two great factors we are not in a position to state.

There is reason to believe that in some of the cases the vigour of the cancer cell and the resisting power of the tissues of the host may undergo considerable change. A severe case may become much less severe, and a mild case may become active and even severe. In the first set of cases we assume that the vigour of the cancer cells has diminished, and that the "strain" is changed in quality, or that something has occurred to strengthen the resisting power of the tissues of the host. In the other set of cases we assume that a more vigorous "strain" of cells has taken the place of those which formerly grew out of the tumour or that the resisting power of the tissues of the host has been lowered.

The lowering of the resisting power of the tissues of the host sometimes appears to result from what may be termed an accident. Most surgeons have listened to the

*Imperial Cancer Research.

story of the patient of how the glandular enlargement he is examining came suddenly after very free use or straining of the arm. The breast had been removed a long time ago but the glands had been left. I suppose that most of us are disposed to treat this story with small belief, feeling that it is due rather to the wish of the patient that it were true than to conviction that it is true. But I suspect it is far more frequently true than we are disposed to believe, and I will give two cases in point:

Some years ago a gentleman consulted me on a hard glandular mass in the upper carotid (parotid) region. Three or four days previously, at an evening entertainment, he had sat in a seat where, for two or three hours, a cold draught of air had played upon the side of his neck. The following day his neck was stiff and swollen. And so it remained, for it was due to a cancerous affection of the glands secondary to an epithelioma of the tongue, which had been removed by Sir Jonathan Hutchinson a few months previously.

In December, 1895, I removed the left border of the tongue for a small epithelioma which had developed on a patch of leucoplakia. The glands of the neck were not removed, for I had not yet begun to remove them as a routine operation. The patient remained quite well until the beginning of 1898, when he contracted mumps from his sons. The attack of parotitis on the right side subsided within the usual time, but the attack on the left side did not subside, but a hard fixed mass remained in the neck. It was not a proper case for operation, because the tumour was so fixed, and he died of it in the course of a few months after I last saw him.

Ten years ago these cases would have been explained by suggesting that the "chill" and the mumps had drawn a quantity of blood into the neighbourhood of the lymphatic glands, and that the glands had in consequence been able to furnish better sustenance to the cancer cells. The terms in which we speak of these occurrences are of small importance. There was no recurrence in the tongue in either case. It must therefore be assumed that the cancer cells had already migrated to the glands before the operation on the tongue, and that they had remained lethargic there until the conditions had been disturbed by what may be spoken of as an accident.

There has been, as long as I can remember, an impression among surgeons that cancer, when it attacks young people, is likely to run a rapid course—much more rapid than that of the same variety of cancer of the same part of the body in an aged person. I do not attack the impression, for I really do not know whether it is correct. But the obverse must not be relied on—that cancer runs a a very slow course in aged people. I have many times seen persons 70 and 80 years of age suffering cruelly from cancer which might have been removed two or three years previously; but the operation had not been performed, because the opinion had been expressed that the disease would run a slow course in so old a patient and would never be likely to cause serious pain or trouble.

In cases, then, in which the cancer cells have broken bounds and are wandering or migrating, the hope of the patient lies in these factors: (1) In the inability of the cancer cells to exist and flourish at a distance from the tumour; (2) in the possibility that the cancer cells in the individual case may be wanting in vigour; and (3) in the possibility that the resisting power of the host may be high.

The first of these factors requires no treatment: the second is quite beyond our control at present; and the third has been for some years constantly before us—so much so that the attempts to discover a specific against cancer have given way, in the minds of most scientific physicians and surgeons, to an attempt to discover some means of increasing the resisting power of the host. This is the object of experimental investigation in laboratories; and means have been discovered of raising the resisting power of the tissues of animals; but not against the spontaneous occurrence of cancer. These means have not been successfully applied, hitherto, in human beings. Those which have been tried are, for the most part, empirical. But some of them rest on observation and some on theory. Coley's treatment is an example of a method resting on observation; Beatson's (removal of the ovaries) of a method resting on theory. As to the empirical methods, they are legion. Special diets; the avoidance or taking of particular articles of food; drugs; animal extracts; external applications; preparations made from cancerous patients and cancerous tumours—these are representative of the means employed to "kill the cancer," or to raise the resistance of the host.

The Migration of the Cancer Cell.

The application, then, of this theory as a working theory of cancer reduces itself to a consideration of the migration of the cancel cell on the one hand and the resistance of the host on the other. As regards the migration of the cancer cell, we have to ask ourselves whether the cells of every variety of cancer migrate; whether the cells of every case of the same variety of cancer migrate at the same time and to the same extent; and when do cancer cells migrate?

1. *Do the Cells of Every Variety of Cancer Migrate?*

I do not know of any data to settle this question. The proof of migration is the presence of metastasis. It may be maintained that the cells of those tumours (like rodent ulcer) which do not produce metastasis do not migrate. I am disposed to thiuk that they do migrate, but that they cannot find subsistence in the organs and tissues which they reach.

2. *Do the Cells of Every Case of the Same Variety of Cancer Migrate at the Same Time and to the Same Extent?*

Here, again, we are obliged to depend rather on conjecture than on ascertained facts. But such evidence as there is strongly suggests that there is very considerable difference both in respect to time and to extent. Quite apart from the variations observed in the occurrence of metastases in a series of tumours of the same variety in the same part of the body—for instance, a series of tumours of the breast, where the variations might be attributed to differences in the resisting power of the tissues of the respective hosts—the variation in the rate of growth of the primary lesions (the tumours) and the great difference which microscopists find in sections of a series of primary lesions (tumours) point very strongly to this conclusion.

In some cases the tumour is very well defined both to the naked eye and to the microscope. The cancer cells are not numerous for that variety of tumour as compared with other tumours of the same variety. They are not observed in the tissues outside the apparent limit of the tumour, and the general aspect is a lack of activity. The reports of microscopists on such tumours are that they are "slow-growing." In forming this opinion they also take into account the arrangement of the cells and are disposed to consider those tumours less malignant in which the cells are arranged in a very orderly manner, so as to represent more or less normal tissues. They may be correct in the opinions which they express, but I often think they far exceed the limit of the scope of the microscopist. Many of them know little or nothing of the clinical pathology of cancer. And they do not understand that the prognosis of an individual case of cancer depends on all the conditions of the case, and should not be hazarded on one particular condition by persons who are not in possession of all the other conditions.

In other cases, even when the tumour is well defined to the naked eye, the cancer cells are very abundant, grossly formed, irregular in size and shape, and are very coarsely arranged. In such cases single cancer cells and groups of cells are observed in the tissues outside the apparent limit of the tumour. The reports of microscopists on these tumours are to the effect that they appear to be particularly malignant. I believe this opinion to be generally correct.

I will give one case in support of it, which I have already published elsewhere:[6]

I removed a portion of the right half of the tongue to an inch behind a flat plaque of epithelioma right on the border. Finding it a little thicker than had been expected, I cut out a lump of muscle in the floor of the mouth beneath the seat of the ulcer, but did not pretend to remove any muscles, or groups of muscles, to their insertions. The contents of the anterior triangle were removed two or three weeks later. The parts were examined by the Imperial Cancer Research. Dr. Murray reported that no cancer was found in the glands, but that the primary lesion exhibited a very high degree of malignancy. Columns of cancer cells infiltrated the muscles far beyond the apparent limit of the disease. I examined the sections myself, and fully agreed with Dr. Murray's report. I was, therefore, very unhappy about the future of the patient, and wrote to Dr. Joseph Bryan and to Dr. Collins Warren, of the United States, begging them to keep the patient under observation, as

I thought there would probably be recurrence in the muscles of the tongue. But there was not any.

Six months after the operation a lump was unexpectedly found on the *left* side of the neck. An attempt was made by an expert surgeon to remove the contents of the left anterior triangle, but extensive and fixed disease was discovered, and the patient succumbed to the attempt. The sequel of the case proved the correctness of Dr. Murray's report. There was early and extensive reappearance of the disease, but not where we expected to find it.

I can only assume that the glands provided better maintenance for the squamous cells than did the muscles of the tongue. I cannot believe that I did not leave some of these vigorous cells in the muscles of the tongue which were not removed. And cancer cells must, before the operation, have been conveyed to the glands on the left side of the neck. The glands apparently suited them better than the muscles.

3. *When do Cancer Cells begin to Migrate?*

This question is the most important of the three. But, in endeavouring to answer it, we have to rely largely on conjecture and circumstantial evidence. Theoretically, there is no reason why the cells of any and every case of cancer should not begin to migrate from the first moment of their existence as independent creatures. But reasons have been given in the preceding paragraphs for believing that the cells of many cancers do not migrate so early. On the other hand, thousands of cases can easily be furnished to show that they migrate within a few months of the discovery of the tumour, cases in which the successful removal of the tumour has been followed by metastasis, either immediately or after a period which may be very considerable. And there are other cases which suggest that migration of the cells of some primary tumours commences at a very early period.

I will give two cases in point:

An old gentleman had a very tiny ulcer of the front part of the floor of the mouth and a number of large fixed glands under the floor of the mouth and in the neck. I cut out a fragment of the ulcer, had sections made of it, and found that it presented the characters of squamous carcinoma. The patient was very unobservant, but believed the little ulcer and the glands had appeared about the same time. The ulcer was so trivial that Dr. Mackenzie Davidson cured it with a single application of radium (the only case of buccal epithelioma which I have myself known to be cured by radium). We sent him to Paris to see whether radium could be successfully applied to his glands, but he died there in the course of a very short time.

The details of this case leave much to be desired. The second case is much more to the point:

In the spring of 1901 I removed by a trivial operation one of the smallest squamous carcinomas of the tongue that I have ever seen. It was just under the left border of the tongue in the middle of an old area of leucoma and glossitis, due to past syphilis (Fig. 1).* In October, 1904, three and a half years after the operation on the tongue, the patient consulted me on account of a large, hard, glandular mass in the parotid (upper carotid) region on the same side. It had only been noticed three months. I removed it and found it to be squamous carcinoma (Fig. 2).

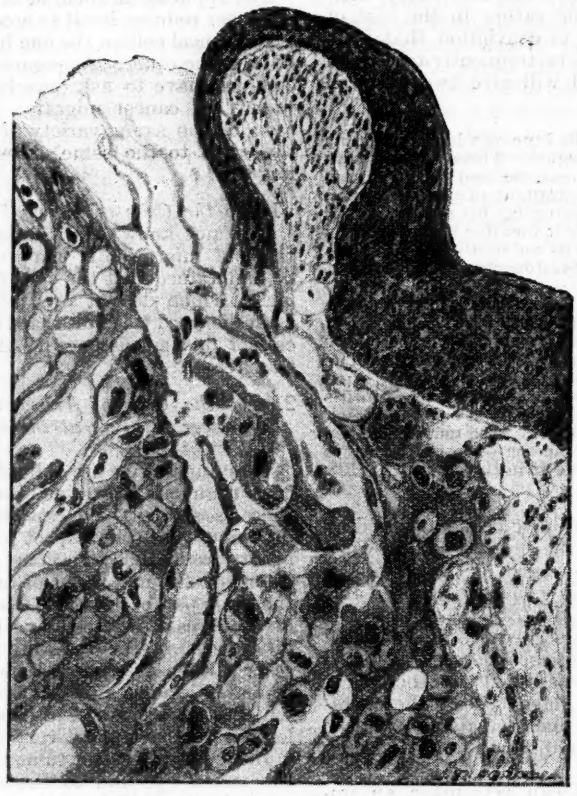

Fig. 1.—Squamous carcinoma of tongue.

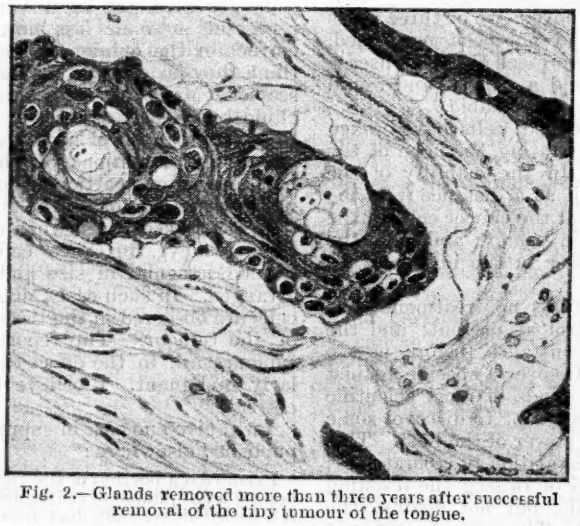

Fig. 2.—Glands removed more than three years after successful removal of the tiny tumour of the tongue.

There was no disease in his throat, or cheek, or mouth, or tongue, for I had cut out the whole of the little area of leucoma and glossitis. And the whole operation had been so small that the doctor who first saw the tumour in the neck and examined the mouth, and particularly the tongue, for a possible primary lesion, did not perceive that an operation had been performed on the left border of the tongue.

The Resisting Power of the Host.

It is quite evident that the resistance of the host plays a much more important part in relation to the prognosis and treatment of cancer than it has hitherto been supposed to do. Most of our knowledge regarding resistance is due to experimental investigation, and is quite newly acquired.† Amongst other things, we have learnt that resistance lies more in the individual tissues than in the blood or fluids of the host. So far as animals are concerned, we have learnt that resistance is much greater in some animals than in other animals of the same species; that it is not always the same in strength; that it may be increased or diminished by certain definite measures; together with many other matters on which I need not dwell now.

Hitherto we have been in the habit of believing that the success of our operations has been consequent on the complete removal of the tumour, including every outlying cell and group of cells, and in the wide removal of glands which contain metastasis or in which metastasis may be expected. To this we have rightly added the removal of the tissues between the tumour and the glands for the cancers of certain parts of the body, such as the breast. In those cases in which the glands which are liable to metastasis have not been removed, and the result has, nevertheless, been successful, we have attributed success to the fortunate circumstance that the tumour was removed before the cancer cells had reached the glands. No doubt these assumptions are often correct. But I think there is equally no doubt that migration has already commenced in other cases which are successful, and that success has been dependent on the resisting power of the tissues of the host. I do

* A section of it is figured in the Second Scientific Report of the Imperial Cancer Research Fund, 1905, page 45, Fig. 35—not because it was cut in their laboratory, but because, owing to its minute size, some microscopists at that time would not have accepted it as an undoubted squamous carcinoma, and on account of the subsequent history of the case.

† We are largely indebted to the Imperial Cancer Research for our information, and I would refer those who desire to make themselves acquainted with what has been done in relation to this matter to the Scientific Reports of the Fund.

not know how otherwise to account for some of the conditions which are not of uncommon occurrence.

Take, as an example, the history of the case of spheroidal-cell carcinoma represented in Figs. 12 and 13.[7] The operation included the entire breast, the contents of the axilla, the tissues between the breast and the axilla, and a part, but not the whole, of the greater pectoral muscle. Five years later I removed a single recurrence, as large as a broad bean, from the muscular tissue below the scar, and perhaps 1½ in. from it. It was undoubtedly due to cancer cells which had not been removed at the operation. For the structure of the tumour and of the recurrent growth is identical. The cells seemed to have remained inactive for more than four years, and then to have grown and multiplied to form a small mass. The resistance of the host held them lethargic for several years. I cannot believe that this was the only group of cancer cells left at the operation. It is far more probable that it was one of several or many groups, which had escaped removal; but that it was the only one of them which succeeded later in overcoming the resistance of the host. I know this patient was quite well five years after the second operation. From indirect information I have received I believe she is still quite well. I judge that her resisting power is still maintained. It may possibly have enabled her to destroy other groups of cells which might otherwise have developed into tumour masses.

Again, take the case of cancer of the tongue which has been described, in which recurrence was expected in the muscle, but actually occurred in the glands of the opposite side of the neck. I do not believe that I removed every piece of muscle which contained cancer cells. Yet no mass grew from those that were left, and this I attribute to the resisting power of the muscles which lay at some distance from the primary disease.

THE VALUE OF PROPERLY DESIGNED AND EXECUTED OPERATIONS.

It may be inferred from what has been said that I have much greater faith in the resistance of the host than I have in extensive operations, and that I attribute a great part of our success rather to good fortune than to skill. I hasten to correct this impression. If there be one thing which is more clearly proved than another in relation to malignant disease in the course of the last thirty years, it is the wonderful improvement in the results of operations for cancer. Wide and early operations, adapted to the pathology of the particular variety of malignant disease in each particular part of the body, have been attended with very great success. Nor is this to be wondered at. For the tumour is the manufactory and the storehouse of cancerous cells. And even in those cases in which the cells have begun to migrate, it is most desirable to get rid of the chief source of cancer cells. The resistance of the host has a much better chance of contending successfully with scattered cells, perhaps not yet firmly established where they lie, after the removal of the tumour. Indeed, I have thought for a long time past that if a "specific" against cancer were discovered it might even then be very desirable to remove the primary lesion—the tumour.

It will be noted that, in connexion with "wide and early operations," it is suggested that the operations must be "adapted to the pathology of the particular variety of malignant disease in each particular part of the body." For thirty years I have urged this. But it is not yet by any means generally accepted or acted on. Because a particular scheme of operation is successful for a particular variety of cancer of one part of the body, a scheme as nearly like it as possible is recommended for a different variety of cancer in another part of the body. This method of reasoning by analogy has led to very serious errors in the scheme of operations. The operative treatment of cancer of the breast has been taken by a large number of surgeons as indicating the ideal which should be aimed at in operations for malignant disease of all parts of the body. It includes two very important features—the removal of the entire breast, and the removal in a continuous mass of all the tissues between the breast and the axillary glands. The success which has attended operations for cancer of the breast has led many persons to believe that precisely the same principles should be applied in every operation for cancer in which it is possible to apply them. Not many years ago there were distinguished surgeons who insisted that the entire tongue should be excised in every case of cancer of the tongue. For quite a number of years there were surgeons and laryngologists in the United States and on the Continent who removed the entire larynx in every case of cancer of the larynx, whether intrinsic or extrinsic, whether large or small.

I think the "entire organ" craze has by this time died out, except for such organs as the breast, ovary, testis, etc. But the removal of the tumour, the associated glands, and the intervening tissues in one continuous mass still possesses great attraction for certain surgeons. It is recommended as a routine operation in cases of cancer of the tongue, in spite of the fact that it seriously adds to the danger of the operation and impairs the powers of speech and mastication. It is quite unjustified by careful observation and comparison of the results of operations.[8] I think I have recently seen it recommended for cancer of the lower lip, for I have seen some ghastly pictures of quite up-to-date operations on the lower lip. But I suppose they refer to very extensive primary disease of the lip. I cannot conceive that any surgeon in his senses would make a routine practice of such horrible operations.

Some of these operations are recommended on the microscopical findings of some of the cases in which continuous sections have been cut from the tumour to the glands. Cancer cells have been found in the intervening tissues, and the conclusion has therefore been drawn that the intervening tissues ought to be removed in every case, in spite of the much greater danger to life from the operation and the much greater permanent crippling of the patient. Fortunately, this routine, which has been particularly urged in the treatment of cancer of the tongue, has not been adopted by the majority of surgeons.

The tumour of the tongue and the associated glands have been separately removed, and the results have been such as to justify separate removal as against continuous removal. These cases and other similar cases in other parts of the body clearly show that every cancer cell or groups of cells which the microscope discovers do not develop into tumours, even when they seem to have made good their footing in the tissues at some distance from the tumour. I have been so impressed with the danger of trusting implicitly to microscopic findings and planning operations on them, that I have ventured to lay down the axiom—

"*That if an operation does not fulfil the requirements of pathology and is, nevertheless, exceedingly successful, the pathology which relates to it must be revised: either the observations are incorrect, or the deductions which are drawn from them are not justified.*"[9]

REFERENCES.

[1] *Lectures on Surgical Pathology*, by James Paget, F.R.S., vol. ii. London, 1853, p. 18. [2] Loc. cit., p. 529. [3] Loc. cit., p. 344. [4] Loc. cit., p. 346. [5] Loc. cit., p. 351. [6] *A System of Operative Surgery*, edited by Burghard, Oxford, 1909; vol. ii, p. 241. [7] Lecture II, BRITISH MEDICAL JOURNAL, vol. ii. 1911, p. 1459. [8] Burghard's *Operative Surgery*, Oxford, 1909; vol. ii. p. 247. [9] Ibid., p. 241.

THE eighty-fourth meeting of the German Association of Scientists and Medical Practitioners will be held this year at Münster in September (15th to 21st). Among the addresses delivered at general meetings will be the following: Professor Czerny (Heidelberg), on the treatment of tumours without operation; and Professor Küttner (Breslau), on modern military surgery.

THE Anglo-American Medical Association, which was founded in Berlin some eight or nine years ago and reconstituted in 1910, has recently acquired well-situated quarters of its own at the Hotel Atlas, 105, Friedrichstrasse. They are open daily from 12 to 2 for luncheon; the assistant secretary is in attendance from 1.30 to 4.30 to give information; and from 9 p.m. to 12 p.m. the rooms are open for social purposes, writing, and perusal of the journals with which the association keeps itself supplied. In addition, there is a formal meeting each Saturday at 8 p.m., when dinner is taken and a paper read and discussed. One of the special objects of the association is to make the visits of British and American medical men to Berlin pleasant and informing by putting them promptly in touch with what is going on in medical and surgical circles, and by enabling them to meet on a social footing their colleagues in Berlin. The association is, therefore, likely to be found very useful to those who wish to study in Berlin. It also publishes a year-book, the current issue of which contains, in addition to other notes, information as to courses on various subjects more or less constantly in progress, and also as to vacation and other special courses. The honorary secretary and treasurer of the association is Mr. H. R. Carstens.

The Arris and Gale Lectures

ON

THE MECHANISM AND TREATMENT OF SHOCK.

DELIVERED AT THE ROYAL COLLEGE OF SURGEONS, MARCH 20TH, 1912.

BY

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LECTURE I.—PART I.

INTRODUCTION.

MR. PRESIDENT, Fellows and Members of the College,—It is our pleasant duty cordially to thank you for the honour you have conferred upon us in electing us to deliver the Arris and Gale Lectures this year. We have chosen a subject which we believe to be of interest, not only to the operating surgeon, but also to the pathologist, physiologist, physician, and anaesthetist. We cannot lay claim adequately to represent all these branches of professional knowledge, but we have at least a sympathetic interest in them; and this research embodies a humble effort to apply physiological principles to the practical problems of medicine and surgery. Before proceeding to the lecture itself, we wish to express our deepest gratitude to our colleagues for the kindness they have shown in allowing us to take observations on their cases, often at considerable inconvenience to themselves. In particular we would acknowledge the kindness of Dr. Garrod, Dr. Batten, Mr. Waugh, Mr. Fairbank, and Mr. Pardoe. We also wish to acknowledge the assistance in taking records of Drs. Jeffries and Reynolds. Finally, we cannot adequately express our gratitude to Professors Leith and Carlier, of the University of Birmingham, for placing their laboratories and apparatus at our disposal for experimental purposes.

The problem of shock is one of the oldest in medicine, and is still certainly the most formidable obstacle to modern surgical endeavour. It is almost as old as the "everlasting hills"; certainly co-existent with the existence of man. We do not pretend to have completely solved it; rather shall we be well repaid if it is held that we have advanced in any degree the knowledge of its mechanism and rational treatment along lines which will eventually lead us to a clear understanding of its pathology and to a control of its terrors. It is, unfortunately, only too well known that in scientific research, in common with other researches, direct proof to establish the truth of any central doctrine is not always possible. If, however, we approach the subject from many different standpoints and all these lines of approach converge to meet at one point, then it is a logical assumption that that point or central doctrine is true, and the theory is as surely proved as if direct proof were possible. It is on these lines that we have studied the mechanism of shock—by an attempted combination of clinical observations, experimental and pathological research. By these we do not claim to have thoroughly exhausted or completely proved any one aspect of the problem, but rather to have attempted a comprehensive view of the subject from almost every standpoint.

We have tried to reproduce in animals some of the conditions observed by us in man, and to perform on the former identical operations, comparing the results obtained in each. Experimental work has, therefore, been approached more from the standpoint of the practical surgeon than from that of the purist in physiology. We therefore ask the indulgence of physiologists if some of our experimental methods do not appeal to them.

We entered on this research on account of the extraordinary control of shock observed in children with the use of spinal anaesthesia; for the principle of nerve-blocking as applied in practice appeared to increase very widely surgical possibilities in those of tender years. At the commencement of our investigations we had few fixed ideas on the subject of shock, and did not possess any great knowledge of the literature. Of set purpose we refrained from consulting the views of other authors; and the fact that our observations and conclusions are made *entirely independently*, and yet so largely harmonize with some of the views of authorities on this subject, should contribute largely to their value. Again, we wish to point out that the deductions from our observations were not arrived at until from many months to one or two years had elapsed after the taking of the records. Hence the liability to error is equal for all the observations we have made; and these observations were made entirely without bias.

Since working out our own results we have studied the literature to the fullest extent we were capable of. If, therefore, in these lectures we do not often quote other authorities, or if we seem to ignore their work, it is not due to any lack of appreciation, but rather to the fact that a summary of the literature is not possible in the time at our disposal. We are fully aware of the justness of any criticism that our work has not extended over a sufficient time to warrant our conclusions. But we would state that it has occupied four years of constant labour, and we prefer at this point to give our conclusions to the profession in order that we may profit by honest criticism, and that those who are better qualified for such a task and have more time to devote to it than ourselves may take up and justify our conclusions.

METHODS OF INVESTIGATION.

Blood pressure estimations were taken at frequent intervals in a great number of surgical operations under all possible conditions of anaesthesia and anaesthetists. The difficulty of obtaining continuous blood pressure records in man, and therefore the difficulty of comparison of records in man with those obtained in animals, led us to devise a modification of Gibson's excellent instrument. A description of this instrument will appear in the forthcoming number of the *Quarterly Journal of Medicine*. By it we are enabled to record graphically the blood pressure every ten or twenty seconds for a period extending over more than two hours. Simultaneous respiratory and pulse or time tracings can be taken. The results have been plotted out on charts together with remarks as to the particular tissues being manipulated. By means of this instrument we have been enabled to compare the pressure changes in man with those in animals during the same operative manipulations, and we have learnt how valueless isolated readings of the blood pressure are in a study of surgical shock. We have examined histologically specimens in serial sections from animals we have operated on, and from the human subject, in order to ascertain what cell changes, if any, are to be noted. We are also much indebted to Dr. Rosenheim, of King's College, for his courtesy in making chemical examinations of the central nervous system in cases of clinical shock. Finally, the condition of the suprarenals in shock has been investigated, at our suggestion, by Mr. Priestley, of the University of Birmingham, in order to determine if there is any constant change in those organs in connexion with shock and conditions of low blood pressure.

RELATION OF THE BLOOD PRESSURE TO SURGICAL SHOCK.

The importance of the alterations in blood pressure to surgery are well known to all, and the many therapeutic measures for counterbalancing such effects are also well known; so that by these it is possible, to a large extent, to mitigate the injury likely to be inflicted. A study of the blood pressure under various surgical procedures has therefore in itself an important significance in the welfare of the patient, a significance to which we hope to be able to apportion its true value. But we hold that the changes in blood pressure are of vastly greater importance as a *symptom* or *sign* of infinitely graver disturbances to the physiology of the subject; that treatment to be of permanent value must be directed against the cause, however desirable it may be to relieve the symptom; and that a study of the mechanism of cardio-vascular changes resulting from surgical operations

should naturally follow the observation of such variations. Factors which normally influence the variations of blood pressure need not detain us at the present time.

Now "the whole of an animal's life may be looked upon as a series of reflex actions" (Starling), the physiological equilibrium being maintained by a succession of afferent impulses, each of which calls forth an efferent response. The most important afferent impulses which reach the vasomotor centre (Diagram I) and influence the blood

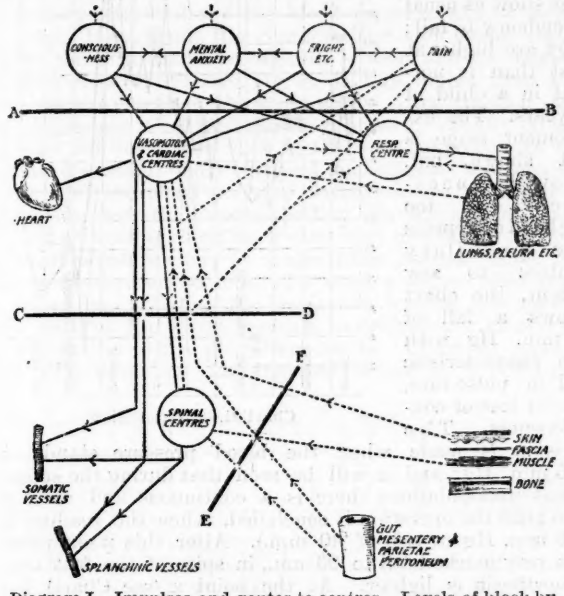

Diagram I.—Impulses and routes to centres. Levels of block by different anaesthesias.

pressure are: (*a*) *From the higher centres*—for example, mental activity, emotion, etc.; (*b*) *continuous impulses from the peripheral parts of the body.* These form the most important factor to be considered in surgical operations, since it is this normal reflex which is subjected to the greatest disturbance. The study of the arterial blood pressure under these conditions, therefore, affords reliable information as to the effects of various surgical procedures on the central nervous system, provided we can appraise these variations at their true value. To do this it is necessary to eliminate the first factor mentioned, (*a*); further, it is essential to consider the effect of these afferent impulses on the respiratory centre, which is an important factor in the regulation of the blood pressure, and must necessarily be subject to some extent to the same influences as the vasomotor centre. The blood pressure also varies with:

1. Increased cardiac output.
2. Increase of peripheral resistance.
3. Muscular effort.

Interpretation of blood-pressure variations, therefore, during surgical operations necessitates continuous or consecutive records or tracings at short intervals of:

1. Blood pressure.
2. Pulse rate.
3. Respiration.

The Influence of the Higher Centres on the Blood Pressure.

Diagram I is a schematic illustration of the most important influences on the vasomotor and respiratory centres which we have to consider. Regarding the vasomotor and respiratory centres as of primary importance, all impulses to these are marked as afferent by dotted lines, with the exception of those from the higher centres; efferent impulses are marked by a continuous line. A—B is the situation of the block to impulses in general anaesthesia; C—D is the situation of the block in trans-section of the cord; E—F is the situation of the block in (1) spinal anaesthesia, (2) section of the posterior roots, and (3) excision of the cord.

1. *Consciousness.*

Blood pressure readings were taken at short intervals on a child of about 7 years, at the Medical Society of London (April 17th, 1910). The child was perfectly quiet and manageable. Two facts are evident from an examination of this chart. In the first place, the mean blood pressure gradually subsided as the child became mentally more reconciled to the situation. In the second place, individual variations correspondingly decrease. It seems therefore that:

The activity of the higher centres acts as a stimulus to the vasomotor centre, and this not only raises the mean level of the arterial blood pressure, but also increases the range of variations. This is further supported by tracings of a child asleep and awake; here we found that, during sleep, rapidly consecutive tracings showed that the blood pressure in sleep is about 20 mm. lower than during consciousness.

Tracings from a fretful child, during operation under spinal anaesthesia, show that these features are accentuated. In extreme mental disturbance, exemplified by a tracing under spinal anaesthesia where excitement was a predominant factor, the blood pressure is raised enormously and the variations are still more marked.

2. *Consciousness of Pain.*

In pain, one tracing which we have been able to obtain appears to show that the mean level of the blood pressure is hardly raised at all, but that the most marked feature is the increase in individual variations. We conclude, therefore, that the emotions raise the mean blood pressure, and increase the individual variations in proportion to their intensity, but that *in consciousness of pain*, perhaps the most violent of the emotions, *the variations are the most distinctive feature.*

Inhalation Anaesthesia.

Professor Crile states that "those parts of the nervous system which are embryologically and phylogenetically the oldest" . . . are the hardiest and the least susceptible to inimical influences.[1] It is misleading, therefore, to state that chloroform and ether, when inhaled, paralyse from above downwards; rather must we regard a definite concentration of these drugs in the blood, as powerful enough to paralyse consciousness, which, for example, is yet insufficient to produce a similar effect on the lower centres.

(*a*) *Chloroform Anaesthesia.*

Tracings from the human subject show, as a rule, the initial rise during the preliminary excitement of the higher centres. After this the blood pressure falls proportionately to the concentration of the drug. The abolition of consciousness in chloroform anaesthesia usually induces a drop in blood pressure amounting to about 20 mm. Hg. or about the same as in the abolition of consciousness during sleep. This drop of blood pressure is attributable to the blocking of continuous impulses from the higher centres to the vasomotor centre. With regard to the respiratory centre, chloroform appears first to stimulate, then to depress, the afferent fibres which inhibit inspiration. A further concentration of chloroform appears to directly paralyse the centre itself.

It might be expected that the more resistant vasomotor centre would show signs of stimulation as the percentage of chloroform vapour increases, and that this should be indicated by a subsequent rise in blood pressure. We have never been able to detect such a rise; and it seems that, under ordinary surgical anaesthesia, chloroform narcosis within the limits of safety does not influence the vasomotor centre to any extent. Further evidence in support of this conclusion will be forthcoming. Finally, the effects of chloroform on the heart muscle itself must not be overlooked. We are led to suppose that death from "overdose" of chloroform is due, primarily, to paralysis of the respiratory centre.

(*b*) *Ether Anaesthesia.*

In the administration of ether by the open method the same preliminary rise of blood pressure is seen. When unconsciousness has been induced the blood pressure usually remains at about the same level as before induction. Individual variations, however, are much more marked. We have concluded: (1) That the fall in blood pressure, consequent on the blocking of impulses from the higher centres in unconsciousness, is compensated in ether anaesthesia by the stimulant action of the drug on the respiratory centre; (2) that the variations are

widely increased owing to the increase in the respiratory amplitude and rhythm. Finally, we cannot agree that "ether raises the blood pressure." Our observations lead us to conclude that the effect of ether is to compensate for the lowering of the blood pressure, consequent on the paralysis of the higher centres, by the stimulation of the respiratory centre and the heart; the net result being that by this mechanism *the normal level of the blood pressure is approximately maintained, though with a wider range of variations above and below the mean.* Further, that the concentration of this more volatile drug never reaches a degree sufficient to induce the stage of paralysis in respect of the respiratory centre.

Variations in Blood Pressure during Lumbar Puncture and the Induction of Spinal Anaesthesia.

The results of our investigations of this subject are shortly to be published in detail in the *Quarterly Journal of Medicine*. It will be sufficient, therefore, to refer briefly to the conclusions we have arrived at.

Lumbar Puncture.

The insertion of the needle into the spinal theca is accompanied by a marked elevation of the blood pressure; this is not due to the influence of pain, since it is present, though in a different degree, in unconsciousness, and even under anaesthesia. The withdrawal of cerebro-spinal fluid, and the subsidence of the emotion resulting from the puncture, are responsible for a gradual fall of pressure. But the original level is not regained within twenty minutes. We have taken tracings in various forms of intracranial pressure, and in one apparently normal subject (where the fluid was obtained for cytological examination), and we conclude that the net result of lumbar puncture is to raise the blood pressure for at least twenty minutes afterwards. The withdrawal of cerebro-spinal fluid, therefore, is clearly not responsible for the drop of blood pressure occurring about this time under spinal anaesthesia.

Spinal Anaesthesia.

Tracings show that, under dextrin-stovaine anaesthesia, a complete block to afferent impulses is instituted, and all curves are constant, independently of the nature of the operation performed. The fall in blood pressure occurring is attributable to three factors: (1) Subsidence of mental excitement after the lumbar puncture; (2) to a very small extent to muscular relaxation; (3) most of the drop of pressure observed is due to the paralysis of the thoracic, combined with supra-umbilical abdominal, muscles, and is directly proportional to the height to which paralysis is induced. Other variations observed are definitely attributable to the phenomena of mental activity, and bear no relation to the steps of the operation.

Blood Pressure Variations due to Afferent Surgical Stimuli.

Any surgical operation entails the stimulation, to a greater or lesser degree, of afferent nerves supplying the operation area; these impulses we propose to study in their relation to the respiratory centre and in the efferent responses which they call forth from the vasomotor centre. Such impulses may travel by more than one route (see Diagram I): (1) They may evoke a reflex in the segment, or segments, whose afferent branch, or branches, are stimulated. It will be apparent later that blood pressure variations of this origin may, for our purposes, be neglected. (2) They may travel up to the central nervous system and evoke reflex responses according to the nature and extent of the stimulus and the condition of the centres.

Manipulations in some parts of the body will, presumably, excite more disturbance in the central nervous system than others. On what factor does the extent of such disturbance depend? Clinically we know that the degree of shock is directly proportionate to the extent of the damaged area—that is, the number of nerve fibres stimulated and the region of the body which is subjected to injury. In surgical operations we are confronted with the effects of summation of stimuli and the mechanism of the resulting fatigue or shock.

Summation of Stimuli.

Chart 21 is taken from a child during the performance of the operation of circumcision under light chloroform anaesthesia. In this chart the blood pressure and pulse-rate are both depicted.

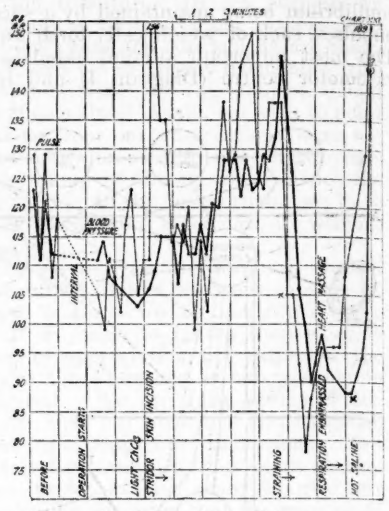

Chart 21.—Circumcision.

In the first place it is noticeable that the original readings show as usual a tendency to fall; they are higher at first than is normal in a child of 3 years. The excitement stage is not shown, but, though anaesthesia is too light to depress the medullary centres to any extent, the chart shows a fall of 11 mm. Hg with the characteristic fall in pulse-rate, due to loss of consciousness. The incision is made when the blood pressure stands at 106 mm. Hg; and it will be seen that during the subsequent manipulations there is a continuous and marked rise until the operation is concluded, when the reading is 146 mm. Hg (a rise of 40 mm.). After this point there is a very marked fall to 90 mm., in spite of the fact that anaesthesia is lighter. At the point x (see Chart) hot saline solution is applied to the wound, with the result that a striking rise in blood pressure to 144 mm. occurs (a rise of 56 mm.), or practically to that point which was reached under the stimulus of the operation. The nature of the stimulus to the centres, therefore, appears to have little influence on the result produced; but the extent of the excursion of the blood pressure appears to vary rather with the degree of interference (that is, intensity). Further reference to Chart 21 shows that the rise of blood pressure during the manipulations presents a "step ladder" appearance, which is suggestive of dependence on the summation of stimuli. Now, if the pulse tracing be examined, it will be seen that the variations in rapidity follow almost identically the excursions of blood pressure. The actual extent of the variations does not correspond identically in the two cases, because, in the case of the pulse, experimental error is great. Again, if, during an operation of this nature, an observer carefully examines the radial pulse, the tension will be found to increase and the percussion wave will be felt to be smaller. Further, a dicrotic pulse, such as is not infrequently observed under chloroform anaesthesia, loses this characteristic at the first stimulus of the operation.

To summarize—the stimulus of circumcision is accompanied simultaneously by: (1) A marked step-ladder rise in blood pressure; (2) a corresponding increase in pulse rate; (3) a diminution in the percussion wave; (4) an increase in respiratory rate; and (5) an increase in respiratory amplitude. Circumcision performed under spinal anaesthesia yields an absolutely uniform blood pressure line, showing: (1) That all these changes are the result of reflex response of the central nervous system to the stimulus of the operation; and (2) that this response is due to hyperactivity of all the centres influenced by the centripetal impulses.

The effects of this stimulus on the centres are therefore: (*a*) *The respiratory centre.* Increase in rate and amplitude tends to raise the level of the blood pressure, and to increase its respiratory variations. (*b*) *The vasomotor centre.* Stimulation of this centre results in efferent stimuli, passing out through the whole sympathetic system, the result being: (1) A rise in blood pressure from general vaso-constriction; (2) acceleration of the pulse-rate to a corresponding extent; and (3) a diminution in the size of the pulse, owing to the contraction of the arteries.

In order to eliminate any possibility of the variations commented on being due to other agencies (for example,

variations of anaesthesia, experimental error, etc.), we have taken charts of the same operation performed under different depths of anaesthesia. Chart 22 was taken from a boy, 2 years of age, operated on for inguinal hernia under very light chloroform anaesthesia. The respiratory and pulse rates are seen to follow the blood pressure closely, though the lightness of the anaesthesia entails a considerable variability in the readings. In spite of this, however, the respiratory amplitude (where the experimental error is very much less than in the pulse and respiratory rates) follows the blood pressure almost step for step. Here, again, the characteristic step-ladder rise, due to the summation of stimuli, is seen, and the blood pressure rises to 125 mm. Hg or 33 mm. higher than at the commencement of the operation. After traction on the peritoneum is relieved the blood pressure rapidly falls, but does not reach the level of the starting-point. In a similar operation under deeper anaesthesia the chart shows that the blood pressure variations are practically the same, but that corresponding variations in the respiratory tracing, both in rhythm and amplitude, follow the blood pressure curve to a much less extent. Now, if chloroform narcosis be induced to such a degree that the operation does not affect the respiratory tracing, it is again apparent that the blood pressure variations are in every respect similar to the preceding charts. Chart 24 represents the operation for inguinal hernia in a child of rapidly rises, in spite of the fact that these proceedings involve a considerable amount of haemorrhage. With the attack on bony structures (the laminae) a marked alteration in the blood pressure tracing is noticed, for marked oscillations, corresponding with the repeated stimuli to bone, are evident. Each attack on bone corresponds closely with a definite "spike" in the blood pressure line, though it was not possible to indicate each separate stimulus. As the operation nears its conclusion the blood pressure continues to fall; but this fall is still occasionally interrrupted by such spikes. Further study of this chart will be resumed later; in the meantime, however, we wish to call attention to Chart 26. This chart represents the operation of laminectomy on a dog, plotted out in a correspond.

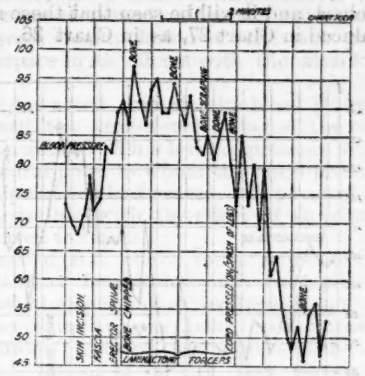

Chart 26.—Laminectomy in dog (plotted out on chart like human ones).

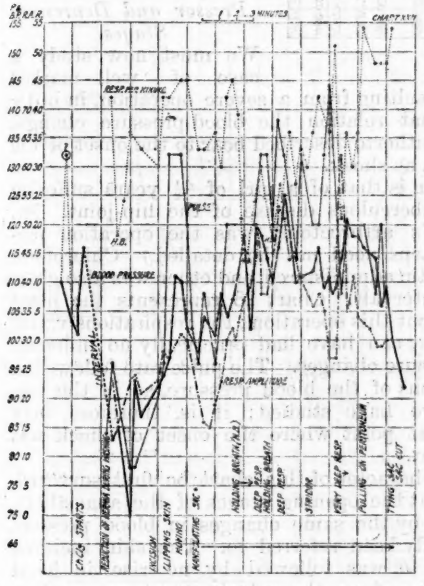

Chart 22.

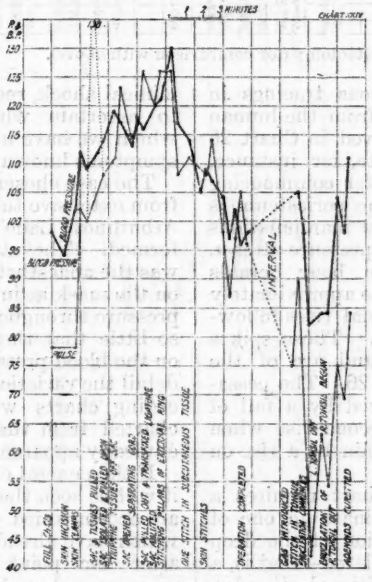

Chart 24.

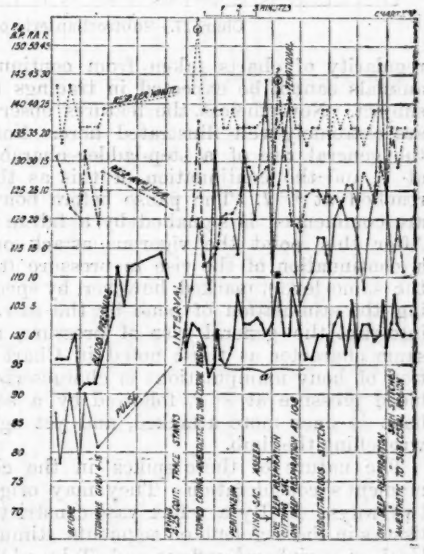

Chart 25.

Three hernias for comparison. Chart 22, Light CHCl3. Chart 24, Deep CHCl3. Chart 25, Spinal anaesthesia.

4½ years under very deep chloroform narcosis. The respiratory lines are not charted, since they did not vary throughout. In spite of this fact, the pulse-rate and blood pressure lines exhibit precisely the same characteristics. It will be seen that the total rise of blood pressure (about 33 mm. Hg) was not affected by the depth of narcosis. Chart 25, on the other hand, shows that all these lines are practically constant when this operation is performed under spinal anaesthesia. The trivial rise at *a* is either respiratory in origin, as evidenced by the respiratory lines, which move in opposite directions at this time, or of mental origin, as shown by the pulse-trace. This chart stands in evidence that the variations we have referred to are attributable to the afferent impulses of the operation.

From these and other tracings we conclude that chloroform does not block afferent impulses arriving at the vasomotor centre unless administered in large doses over a prolonged period of time. In other words, the *vasomotor centre is the most resistant of the medullary centres.*

Experimental evidence supports these clinical findings. If, for instance, the operation of laminectomy be performed on a dog under chloroform anaesthesia, a definite small rise of blood pressure is observed with the skin incision. With the attack on the deep tissues the blood pressure ing manner to the clinical charts we have already submitted. Its resemblance to those taken from the human subject is a striking feature. In the first place the rise in blood pressure at the skin incision, and the subsequent fall practically to the starting point, are again observed, and are strictly comparable with the spike accompanying the skin incision, which has been seen in the previous charts. Following this we note the step-ladder rise, consequent on the "summation of stimuli" as the stimulation of the deep tissues commences. There are two other features of interest. In the first place there is a general rise of pressure during the operation, and a fairly rapid fall as the operation nears its conclusion. The second point to which attention must be directed is the definite "spike" on the chart each time bone is attacked. It is also noteworthy that stimulation of the dura and cord by the forceps results in a well-marked rise of blood pressure. Now, the characteristic feature of stimuli produced by chipping pieces of bone is that they are short-lived; accordingly these spikes present the characters of an equal rise and fall, or approximately so—that is to say, they form a break in the step-ladder rise and fall.

It would thus seem as if the steps in the operation caused a general rise in pressure, special rises being consequent on the stimulation of specially sensitive regions,

of which bone is one. But, in comparison with Chart 26, we show Chart 27. This chart represents the blood pressure taken during the steps of a subtrochanteric osteotomy on a child. Details of the operation are given on the chart, and it will be seen that these same spikes are reproduced in Chart 27, as in Chart 26. Naturally, the perfect regularity of charts taken from continuous tracings in animals cannot be expected in tracings from the human subject. Nevertheless, the features observed in Chart 26 are extremely well illustrated here. Note, for instance, the general rise of a step-ladder character commencing at *, and the continuation of this as the periosteum is reached at ** *1*. The pause before bony manipulations are commenced is signalled by a fall in pressure after *a*. After this point the vigorous attack on bone heralds a continuation of the rise in pressure (to approximately the same level), marked, however, by special rises following the stimulation of bone by the saw. These spikes interrupt the general rise of pressure, and are of the same character as those noted in Chart 26. The cessation of bony manipulations is characterized by a fall of blood pressure at ** *2*, followed by a second rise when bone is once more attacked, and yet again by a rise on wrenching the limb.

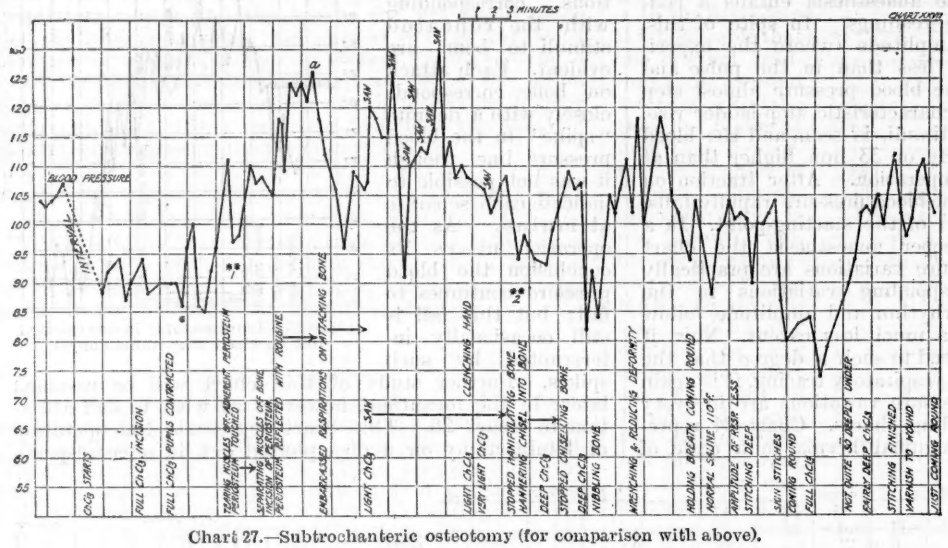

Chart 27.—Subtrochanteric osteotomy (for comparison with above).

The nature of these spikes in the chart requires a moment's consideration. They may originate in one of two ways: (1) By a reflex vaso-constriction of the deep tissues in the segment or segments stimulated—that is, a local or peripheral reflex; and (2) by additional stimulus to the vasomotor centre resulting from manipulation of more sensitive structures. A study of the original tracings of the operation of laminectomy in a dog demonstrates the real central origin of these variations. Thus, with each bony stimulus, and its concomitant rise of pressure, there is an alteration in the systolic and diastolic variations. The difference between the systolic and the diastolic pressure becomes less, and the cardiac rhythm quicker, with each rise of blood pressure. Conversely, when the blood pressure falls these excursions become greater and the cardiac rhythm is slowed.

Now, the operation of cystectomy in the dog under combined spinal and general anaesthesia shows an absolutely uniform blood pressure and respiratory trace. The perfect regularity of these and of the pulse rate throughout shows that the afferent impulses to the medullary centres are completely blocked, and contrasts markedly with the tracings of a similar operation performed under chloroform anaesthesia alone. These observations demonstrate that the variations observed are the result of the afferent impulses from the operation, and are not variations due to the anaesthetic.

Operations under Ether Anaesthesia.

It has been shown that, in all probability, chloroform administered within the limits of safety exerts little influence on the vasomotor centre; further, that under the influence of this anaesthetic we are able to study the changes resulting from centripetal impulses to the vasomotor centre in considerable detail. Ether, by its action as a stimulant both to the heart and respiratory centre, compensates for the drop in blood pressure resulting from loss of consciousness. It would be expected, therefore, that further stimulation of the vasomotor and respiratory centres, such as obtains in surgical operations, would produce less obvious disturbances than in the case of chloroform. Experimentally, blood-pressure variations are less marked in degree when ether is employed. For experimental purposes, therefore, ether is unsuitable as an anaesthetic, for it masks the variations of blood pressure, although there is no evidence that the afferent impulses are in any way mitigated by its employment—indeed, there is evidence to the contrary.

The Relationship of Blood Pressure to the Onset of Clinical Shock.

Pressor and Depressor Stages.

We must now study a case of well-marked clinical shock, resulting from a severe operation, in order to ascertain what relation the blood-pressure changes which we have hitherto described bear to the onset of the symptoms known as shock.

The case chosen is that of a girl of 4½ years suffering from extensive tuberculous disease of the hip-joint. Mr. Arbuthnot Lane's arthrectomy was the operation performed. (The steps need not be detailed.) Chloroform was the anaesthetic administered, and ether was also given on the mask at intervals. Chart 28 represents the blood pressure throughout this operation; the respirations varied so little that they can have had practically no influence on the blood-pressure changes. The pulse-rate followed in detail the variations of the blood pressure, as in the preceding charts we have studied; it is, therefore, only charted from that point where the onset of shock was clinically apparent.

If the general character of this chart be first surveyed, it will be seen that the opening stages of the anaesthetic are accompanied by the same changes in blood pressure which have already been referred to. The skin incision, after the point *b* was followed by no rise in blood pressure, a departure from the rule in previous cases; in explanation of this it should, however, be noted that all the steps of the operation, as far as the opening of the hip-joint, were mostly through the scar tissue of previous operations. As a result, although there are fairly well-marked variations in the blood-pressure reading attributable to the manipulations of these tissues, there is no rise in the mean pressure. In fact the mean pressure from *b* to *c* shows a steady fall due to chloroform. It is only at *c*, where the joint is opened, and manipulations within its cavity commenced, that marked alterations in the blood pressure manifest themselves.

From A to B, during which time the steps of the excision and manipulation of bone are in progress, the mean curve of the blood pressure does not exhibit such a large rise as in the case of structures interference with which admittedly induces a very much smaller degree of shock (see Charts 21 to 24). The great variations or spikes in the general curve are, however, a striking feature, and these are strictly comparable with the changes already noted in operations on bone; but in the present instance these spikes are very much larger (see Chart 26).

It is significant that these large isolated rises in pressure accompany the steps of those operations which clinically are known to produce marked shock. At B the dislocation of the head of the femur out of the acetabulum is characterized by a striking rise of blood pressure, amounting to over 30 mm. Hg; while cutting away diseased synovial membrane *c* is accompanied by a much less marked,

although quite definite, spike. Again, at c, curetting the bony surfaces of the acetabulum is characterized by another spike of 30 mm. Hg. As bony manipulations cease it is noticeable that the blood pressure rapidly drops to 86 mm. Hg (*f*). After the point *f* continuous manipulations of the soft parts and removal of bone alternate with each other in rapid succession, and, as in cases previously studied, the effects of the summation of stimuli become apparent. Thus the chart from c to D exhibits the characteristic step-ladder rise. It is again significant that each attack on bone is signalized by a spike in blood pressure up to the point D; and, in this respect, the features of Chart 28 up to this point are strictly comparable to those of Chart 27. At the point *e*, thirty-eight minutes from the commencement of the operation, the clinical phenomena of shock were apparent. The blood pressure at this time was 114 mm. Hg, and afterwards rose to 120 mm. Hg. It should be realized, therefore, that, at the time the symptoms of shock were first definitely noted, the blood pressure reading was, with the exception of two spikes at B and C, the highest figure reached at any time during the operation; and further, it may be emphasized that the pressure at the onset of shock stood at practically the highest sustained figure reached throughout the whole operation. The manœuvres caused a corresponding fall of blood pressure in every instance. The cessation of all operative manipulations at *k* is signalized by an immediate and rapid rise of blood pressure (*k* to *l*). Further manipulations, *l* to *m*, repeat the phenomena already observed, though in a less marked degree; manipulation of the soft parts clearly does not compare in its effects with the attack on bone.

It should further be noted that at *l* the blood pressure is 90 mm. Hg, or about the same level as before the commencement of the operation. This level of pressure seems to have been the natural point to which the blood pressure returned when manipulations had ceased. The rest of the chart after point *m*, dealing with the effect of strychnine and atropine, is referred to later.

The interpretation of this chart must now be considered. Broadly it may be divided into two phases: (1) A to D. Here the principles evolved from the consideration of preceding charts hold good in every detail; each stimulus induced an appropriate rise in blood pressure. (2) D to E. In this phase the effects of these stimuli are exactly reversed. The truth of these observations is supported by a further reference to Chart 26. For the concluding stages of laminectomy in the dog reproduce to a large extent the phenomena seen in

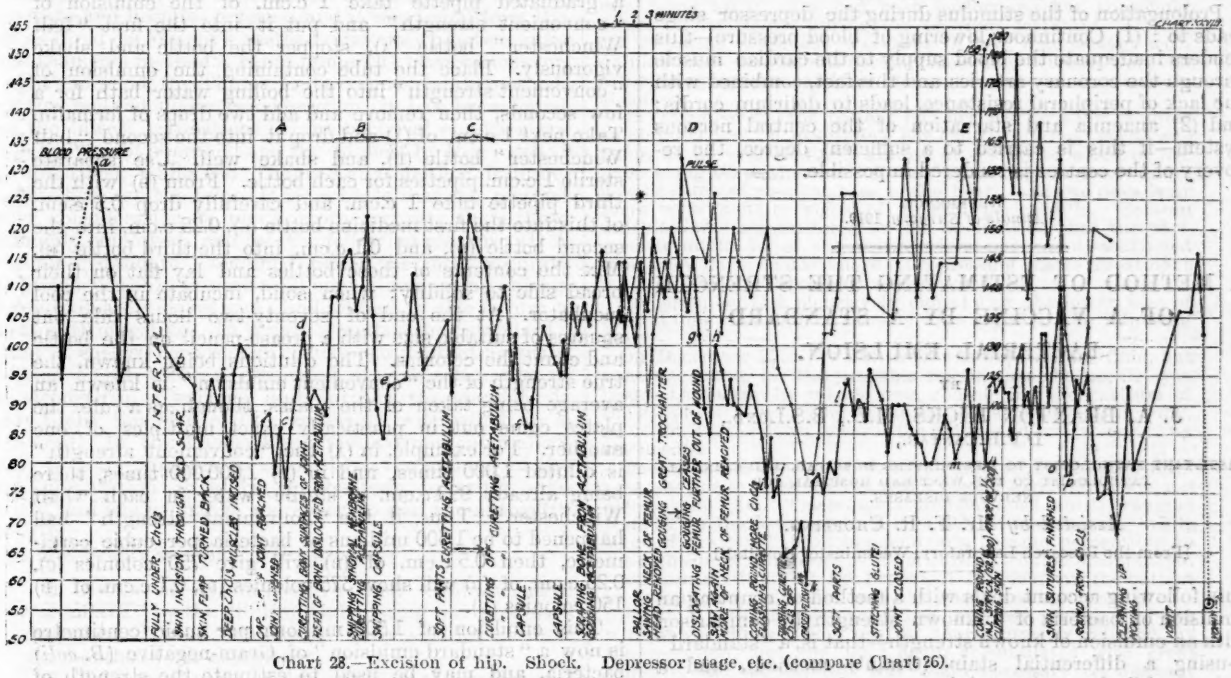

Chart 28.—Excision of hip. Shock. Depressor stage, etc. (compare Chart 26).

respiratory tracing was unaffected, showing that full surgical anaesthesia was maintained throughout, and that none of the alterations in blood pressure could be ascribed to the anaesthetic. Therefore, at *e*, the activity of the vasomotor centre was at its highest. We lay stress on this fact as showing (1) that the centre is not fatigued, (2) that a low blood pressure is by no means an essential feature of surgical shock. Up to this point this chart proves that the series of pathological processes resulting from the operation, in a case which manifests clinically the symptoms of shock, are only a more advanced degree of exactly similar changes in those operations unattended by such clinical evidence.

A striking change in the character of the chart should be noted after D, nearly three minutes later. (During this interval bony manipulations produced the spikes shown in the chart as far as D.) At *g*, twenty seconds after D, the femoral head was dislocated further out of the joint cavity. This manœuvre caused an enormous rise of blood pressure at B, but, when repeated at *g*, it was accompanied by a marked fall. At *h* the saw was again applied to the femoral neck, and again this fresh stimulus is accompanied by a continued fall of blood pressure. The chart notes that these variations are not due to the anaesthetic. Again, the application of a flushing gouge (saline 110° F.) to the joint surfaces at *i* induced a fall, which was only interrupted by a very small spike. Further this chart. We wish to call attention particularly to the fact that this reversal is an *active* process, which constitutes further evidence of the preserved activity of the vasomotor centre. If the fall in pressure were a passive one and due to paralysis of a centre from gradual exhaustion, how can the rise of pressure from *k* to *l* on the cessation of manipulations and its repeated fall on their resumption be explained? It cannot be seriously argued that the centre recovers its activity within the space of twenty seconds!

Further, a consideration of the pulse-rate over the period D to E also supports the view that these variations are active and not passive; for, were the centre paralysed, the pulse and blood pressure would no longer be under the same degree of central control. Consequently, peripheral influences would predominate and the heart would "race" against the low blood pressure and beat more slowly as the pressure rose. Reference to this chart, however, shows that the pulse-rate follows the blood pressure closely in the stage of reversal. Finally, with the swing back (passively) of the blood pressure to its intermediate position, on cessation of the stimulus, the pulse, freed from the influence of afferent stimuli, races against the low blood pressure.

Stages of Surgical Shock.

On these arguments we divide surgical shock into three stages: (1) The stage of stimulation, or the pressor stage;

(2) the stage of depression, or the depressor stage; (3) the stage of equilibrium, when active abnormal afferent impulses are in abeyance.

We must now consider the mechanism of this reversal.

It has been shown that every sensory nerve contains pressor and depressor fibres to the vasomotor centre; stimulation of the pressor fibres only, induces reflex vaso-constriction and cardiac acceleration, while stimulation of the depressor fibres only, induces reflex vaso-dilatation, and at the same time inhibits vaso-constrictor impulses. Stimulation of such a mixed sensory nerve usually induces domination of the pressor group. Domination of the depressor group only occurs (in so far as the present study is concerned) when the pressors are fatigued.

Applying these principles to the results obtained in Chart 28, we conclude the following: The first stage of shock in that operation consisted in a rise of blood pressure and an increase in the pulse-rate, consequent on the domination of the pressor impulses. At D pressor fatigue commenced. Further stimulation initiated a domination of the depressor impulses, the cessation of these impulses being marked by a passive return of the blood pressure to an intermediate level, due to the cessation of active depressor domination.

Death from Shock.

Prolongation of the stimulus during the depressor stage leads to: (1) Continuous lowering of blood pressure—this renders inadequate the blood supply to the cardiac muscle through the coronary arteries, and this fact, combined with the lack of peripheral resistance, leads to delirium cordis; and (2) anaemia and starvation of the central nervous system—if this is carried to a sufficient degree, the recovery of the centres is rendered impossible.

REFERENCE.
[1] *Annals of Surgery*, 1910.

A METHOD OF ESTIMATING THE STRENGTH OF A VACCINE BY A STANDARD BACTERIAL EMULSION.

BY

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THE following account deals with a method of counting an emulsion of bacteria of unknown strength by comparison with an emulsion of known strength—that is, a "standard"—using a differential stain (Gram's method), and a "standard" of opposite staining properties to the bacterial emulsion whose strength we wish to estimate. Thus, if an emulsion of staphylococci has to be estimated, a Gram-negative "standard" (*B. coli*) is used, and vice versa; and by the formulae:

Gram + : Gram − :: × : standard emulsion,
or
Gram − : Gram + :: × : standard emulsion,

the strength is readily worked out.

The "standard" emulsion is obtained by applying the principles used in the estimation of the number of bacteria per cubic centimetre in water or sewage, and the apparatus needed is very simple, and in fact the simple forms of glassware to be mentioned shortly are much more convenient than any more elaborate. The requirements are: A well-spread twenty-four hours old agar culture of *B. coli communis*, a platinum loop, small white sterile glass beads in sterile saline, tubes of sterile normal saline, sterile test tubes, a litre measure, three or more 1 c.cm. pipettes graduated in one-tenths, a Wright's pipette with a glass pencil mark ½ in. from the tip, two glass-stoppered "half Winchester" bottles containing 999 c.cm. of water, three or four 6-oz. flat-sided medicine bottles containing 15 c.cm. of nutrient gelatine (12 per cent. to 15 per cent.) suitably plugged with wool and sterilized, two deep saucepans or water baths. The 1 c.cm. pipettes (rolled up in paper) and the "half Winchesters" with their contents are sterilized.

The culture of *B. coli* is now taken, and an emulsion made by pouring about 2 c.cm. of sterile saline over the agar, and then rubbing off the growth into the saline with the platinum loop. The resulting emulsion is now transferred to a sterile test tube, and some half-dozen of the sterile glass beads added.

The next step is to obtain a "convenient strength" of this emulsion to work with in the subsequent diluting experiments that are the most important part of the process. After many trials we have found that a strength roughly estimated at between 1,500 and 2,000 millions of bacteria per cubic centimetre is a "convenient strength" to use. The opacity of the emulsion which represents roughly this strength is easily obtained either by previous experience, or by allowing three to four drops of milk to mix with 5 c.cm. of water, and then diluting the emulsion from the agar down to the opacity represented by this mixture. Having diluted down the agar emulsion to this "convenient" strength, the open end of the test tube is sealed off in the flame, and the tube shaken for half an hour or more to ensure complete separation of the individual bacteria.

It is now necessary to ascertain the true strength of this "convenient emulsion." The two water baths are next heated, one to boiling the other at 26° C., and the medicine bottles containing the gelatine put into the latter. With a graduated pipette take 1 c.cm. of the emulsion of "convenient strength" and put it into the first "half Winchester" bottle (A), stopper the bottle and shake vigorously. Place the tube containing the emulsion of "convenient strength" into the boiling water bath for a few seconds, then remove and add two drops of formalin. Take next 1 c.cm. of (A) and drop it into the second "half Winchester" bottle (B), and shake well. Use separate sterile 1 c.cm. pipettes for each bottle. From (B) with the third pipette take 1 c.cm. and carefully drop 0.5 c.cm. of this into the first medicine bottle (C), 0.25 c.cm. into the second bottle (D), and 0.1 c.cm. into the third bottle (E). Mix the contents of these bottles and lay flat on their broad side to solidify; when solid, incubate in the cool incubator. At the end of seventy-two hours rule out squares of suitable size with a grease-pencil on the bottle and count the colonies. The dilutions being known, the true strength of the "convenient emulsion" is known, an average being taken of the plates, though, as a rule, the plates come out in practically exact multiples of one another. For example, in (A) the "convenient strength" is diluted 1,000 times, and in (B) 1,000,000 times, there being already 999 c.cm. of sterile water in each "half Winchester." Thus, if the "convenient strength" had happened to be 1,500 millions of bacteria per cubic centimetre, then 0.5 c.cm. of (B) will give 750 colonies (C), 0.25 c.cm. of (B) will show 375 colonies (D), 0.1 c.cm. of (B) 150 colonies (E).

This emulsion of 1,500 millions per cubic centimetre is now a "standard emulsion" of Gram-negative (*B. coli*) bacteria, and may be used to estimate the strength of an "unknown" Gram-positive emulsion by the following method: Having for convenience diluted the "unknown" emulsion down to approximately the opacity of the "standard" emulsion, a slide is thoroughly cleaned and passed through the flame several times to remove any traces of grease. With the Wright's pipette equal volumes of the Gram-negative "standard" and the Gram-positive "unknown" emulsions are taken and thoroughly mixed. One end of the clean slide is slightly warmed and a portion of this mixed drop is put on this part of the slide. Using the pipette as a "spreader" a film is made, blowing across the film as it is spread. The result of the warmth and the blowing is that the film dries evenly and instantaneously. The film thus obtained is carefully fixed by passing three times through the flame, is stained by Gram's method and counterstained by neutral red (2 per cent. aqueous). A large-sized "counting square" having been dropped into the eyepiece of the microscope, successive "squares" are counted with the one-twelfth objective, carefully noting on paper the Gram-positive and Gram-negative organisms in each "square." When 200 to 300 of the "standard" bacterium have been counted, the total Gram-positive and Gram-negative organisms are carefully and separately added up. Knowing the strength of the "standard" emulsion the "unknown" emulsion is readily found by proportion. Thus, supposing 250 Gram-negative organisms and 200 Gram-positive organisms have been counted and the strength of

the "standard Gram-negative" emulsion is 1,500 millions per c.cm., then: — 200 : 250 : : × : 1,500=1,200 millions per c.cm. as the strength of the Gram-positive emulsion. This Gram-positive emulsion may be used as a "standard Gram-positive" emulsion, but if used as such more than 200 of the bacteria should be counted to ensure great accuracy, about 500 of each bacterium being counted before the calculation is made. Of course plate estimations can be made, using staphylococcus instead of *B. coli*, the process being similar to that just described, and a "Gram-positive standard" obtained in this way; but the obtaining of the "Gram-positive standard" from the "Gram-negative" standard saves two series of dilution experiments.

Having now obtained two "standard" bacterial emulsions (which keep well from the addition of the formalin, and are readily and thoroughly mixed from the presence of the glass beads), we are in a position to estimate the strength of any unknown emulsion by simply mixing it with equal parts of a "standard" of opposite Gram staining properties, making a film, and counting by the methods already fully described. The only precaution to be observed with regard to the "standard" emulsions is to cap them suitably to prevent evaporation.

This method has now been used for the past fifteen months in private and hospital practice, and it was found from the first as rapid as Wright's method, and after practice more rapid than this method. From numerous observations on Wright's method, the Thoma-Leitz counting slide method, and the method under consideration, it has been found that the lowest estimations of any bacterial emulsion are given by Wright's method and the highest by this method now described, while the Thoma-Leitz method is intermediate between the two. It is probable that the method under consideration is much more accurate than those commonly employed, and for the following reasons: (1) A constant "standard" obtained under the most accurate conditions possible is used; (2) one is comparing objects of approximately equal size; and (3) one is able to use a one-twelfth objective. In Wright's method the "standard"—that is, the red corpuscular count—is a fluctuating quantity, and ought to be re-estimated at each estimation of the strength of a vaccine, and, further, the standard is many times the size of the bacterium with which it is compared. In the Thoma-Leitz method one must allow thirty to sixty minutes to elapse from the making of the drop preparation to allow the bacteria to settle sufficiently, and one is unable, moreover, to use a one-twelfth objective.

To now briefly summarize the process:

1. Obtain a Gram-positive and Gram-negative "standard" by the diluting and plating out processes described. These "standards" keep good for at least six months in our experience.
2. Take equal parts of the emulsion of "unknown" strength and a "standard" of opposite Gram staining properties and mix thoroughly.
3. Make a film and fix it carefully.
4. Stain by Gram's method, using a counterstain.
5. Count 200 to 300 bacteria, using a "counting square" and a one-twelfth objective and noting the Gram-negative and Gram-positive organisms in the squares counted.
6. Knowing the strength of the "standard" and the proportion of Gram-negative to Gram-positive organisms, the strength of the unknown emulsion is easily worked out by proportion.

In conclusion, I should like to thank Mr. F. R. Chopping, senior laboratory assistant to the hospital, for his invaluable assistance and suggestions in the early part of our investigations and repeated co-operation in the subsequent laborious counting tests so necessary to prove the value of the method.

THE second Shakespeare commemoration service held at Southwark Cathedral, formerly the church of the parish in which Shakespeare was a resident, was held on April 23rd, when Mr. F. R. Benson gave an address on "Shakespeare and the fuller life of the people." It is announced that the fund, of which Dr. R. W. Leftwich is the honorary secretary, for the Shakespeare memorial in the cathedral, has been completed by a gift of £180 by Mr. Sanford Saltus, of New York.

A CASE OF TUBERCULOUS POLYSEROSITIS.

BY

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FELIXSTOWE.

MULTIPLE inflammation of serous membranes is a somewhat uncommon condition, and the case here reported presents features of unusual interest, particularly in its exceptional onset, its abnormal course, and the final *post-mortem* proof of its tuberculous nature.

The patient was a married woman aged 46, with a healthy family history. She had no personal record of any serious illness until ten years ago, when she had an attack of pneumonia, involving the lower lobe of the right lung, and terminating in complete recovery after suppuration, and coughing up of the pus. No abnormal physical signs could be found at the commencement of the illness recorded in this paper.

On November 11th, 1909, the patient was taken ill with the symptoms of influenza, including headache, pain in the back and limbs, and severe prostration. She did not, however, seek medical advice until November 25th, when she was found to be in a state of high fever and nervous excitement, her temperature being 103.4°. She had been performing her household duties intermittently during the previous fortnight. During the following week she was kept in bed, and treated with quinine and simple antipyretic medicine. There were no arthritic symptoms, and no abnormal signs in the chest or abdomen.

On December 2nd the patient left her bed for a few minutes and fainted, and on examining her shortly afterwards she was found to be cyanosed and almost in a state of collapse, her pulse being 145 per minute. A very faint friction sound could now be detected near the base of the heart, and two days later there were definite signs of general pericarditis. Sodium salicylate was administered on the assumption that the pericarditis might be of rheumatic origin, but was discontinued after a few days, on account of its depressing effect. Treatment with quinine and stimulants was resumed.

On December 13th pleurisy developed over the lower lobe of the left lung, and signs of effusion were found on the following day.

On December 20th the dull area was explored for fluid, but none was found, for the probable reason that the needle was inserted too near the middle line, considering the position of the patient, who was lying on the affected side, so that the lung, no doubt, sagged down towards the axilla, and was wounded by the needle.

The erroneous conclusion was drawn, however, that the dullness was due to solidification, and a second exploration was not made at the time. The temperature continued febrile, ranging from 99° in the morning to 101° to 102° in the evening, while signs of scattered bronchopneumonia became perceptible in the right lung, and the signs of pericardial friction disappeared.

On January 4th, 1910, Dr. Brown, of Ipswich, saw the patient in consultation with me, and the chest was again explored—this time with success—and 52 oz. of clear serous fluid was withdrawn. Respiration was, of course, greatly relieved by the operation, but the fluid again accumulated with great rapidity, and paracentesis was again necessary on January 10th, 15th, and 19th, more than two pints being withdrawn on each occasion. The fluid was clear each time, and was examined for tubercle bacilli, as was also the sputum, with negative results.

The skin of the back was now oedematous, and scattered crepitations were heard over the right lung. On January 21st the temperature became normal and remained so for nearly a month, though the sputum, during the weeks immediately previous and subsequent to this, was deeply bloodstained.

Paracentesis thoracis was again done on January 31st, February 16th, March 4th, and March 21st, the patient always being greatly relieved for a day or two after each operation. A consultant who saw the patient on February 22nd considered the case one of polyserositis of rheumatic origin, and negatived the previous diagnosis of tubercle. Potassium iodide and caffeine were now given, but the symptoms of iodism and depression were so marked during its use that it was discontinued after a week.

On March 23rd oedema of the legs became very troublesome, and Southey's tubes were inserted for its relief. They were removed after two days, and again used on several occasions during the remainder of the illness.

Enlargement of the liver and ascites now began to be very obvious, and the abdomen was tapped on April 11th, 5 pints of fluid being withdrawn. The operation was repeated on May 10th, June 2nd, and June 18th.

From July 16th the temperature became regularly hectic, and continued so during the subsequent progress of the case, though emaciation was not so marked as might have been expected.

On July 20th the chest was again aspirated and 3 pints of clear serous fluid were withdrawn.

On August 20th a third consultant saw the case and considered it was not tuberculous, on the ground that emaciation and debility were less than would be expected in the presence of tubercle. Von Pirquet's reaction was then tried, with a

negative result, as was also the diazo reaction for the urine. The chest was aspirated for the last time on October 19th, much less fluid being found than on the previous occasions. The patient now became gradually weaker and more emaciated, suffering occasionally from alarming attacks of syncope. She died during her sleep on December 2nd.

At the *post-mortem* examination the following observations were made:

Abdomen: Intestines everywhere roughened with nodular chronic granulations and coated with a layer of lymph, the intestinal coils being adherent and the omentum thickened.

Liver enlarged and fatty, pale in colour, and showing the characteristic appearances of passive congestion.

Kidneys and spleen normal.

Chest: The pericardium was greatly thickened and its cavity completely obliterated by firm fibrous adhesions between its two surfaces. The orifices of the superior and inferior venae cavae were contracted.

The right pleural cavity was obliterated by adhesions, the lower lobe of the lung being congested, oedematous, and partly collapsed. The upper lobe was congested and studded with small hard tuberculous nodules. The left pleural cavity was obliterated in its upper half by pleuritic adhesions, and shut off from the lower part, which contained about a pint of serous fluid. The lower lobe of the left lung was collapsed, and the upper lobe contained the same tuberculous-looking nodules as the right lung. They were arranged in scattered groups, but had all the appearance and consistence of tuberculous nodules.

Portions of the peritoneal nodules and the pulmonary tissue sent to the Clinical Research Association for microscopical examination presented the typical appearance of tuberculous disease.

The clinical course of this case presents several unusual and interesting features, especially when viewed in the light thrown upon them by the autopsy.

Thus the rapid subsidence of the signs of pericarditis would at first sight render the extensive thickening revealed after death a matter of surprise.

The enlargement of the liver during a portion of the progress of the case was so great that the edge could be felt well below the level of the umbilicus after the fluid had been withdrawn by paracentesis, but there was none of the tenderness usually associated with the cardiac liver. The subsequent diminution in size of the liver was also remarkable, since at the end of the illness its edge reached only about 3 in. below the costal margin on deep inspiration. During the earlier months of the illness the urine contained a large quantity of albumen, but latterly this practically disappeared. Various diuretic drugs were administered from time to time, the most successful being theocin sodium acetate, which in 5-grain doses twice a day produced a very abundant flow of urine, but was discontinued on account of the nausea and depression it appeared to produce. The injection of adrenalin into the pleural and peritoneal cavities was considered, but rejected on account of the risk to life, the writer having had a patient who died suddenly from cardiac spasm immediately after its use for recurrent pleural effusion. The question of the incision and drainage of the pleural cavity was also considered in consultation; but the probability of converting the simple effusion into an empyema, which might be slow to heal and would involve a serious drain upon the strength of the patient, led to its rejection.

The term "polyorrhomenitis" has been applied to a multiple suppuration of serous membranes by Italian physicians, and this condition was fully dealt with by Dr. Frederick Taylor in a paper in the BRITISH MEDICAL JOURNAL for 1900 (vol. ii, p. 1693), but in the case here reported no suppuration occurred. Many writers consider that recurrent pleurisy is almost always tuberculous, and this opinion is borne out by this case, notwithstanding the negative results of the various clinical and pathological tests.

DURING the past winter semester the number of students in the medical faculty of the University of Vienna was 2,334, of whom 125 were women. This number does not include 62 students who entered for particular parts of the curriculum; of these, two were women; or 238, of whom 9 were women, who attended special courses.

THE total number of legally qualified practitioners of medicine in the German Empire at the end of 1911 was 32,500. Taking the whole population of the empire this gives a proportion of about one doctor to every 2,000 inhabitants. The number of medical students in the universities of the empire during the past semester was 12,446, of whom 582 were women. The number of persons who passed the State Examination in the academic year 1909-10 was 945

THE DIAGNOSIS AND TREATMENT OF SCIATICA.

*WITH A NOTE ON THE METHODS IN USE AT HARROGATE.**

BY

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CASES of sciatica, for the purposes of classification, may be conveniently divided in the following manner:

A. *Primary Group*—
1. Sciatic neuralgia.
2. Sciatic perineuritis.
3. Sciatic neuritis.

B. *Secondary Group.*

Sciatic Neuralgia.

By sciatic neuralgia is meant a painful condition arising in the area of distribution of the sciatic nerve. As with other neuralgias, it is probable that there is no definite inflammatory change in the nerve trunk, the condition being purely functional. It occurs most frequently in flabby, anaemic, debilitated subjects, more often in women, and appears to be the expression of nervous exhaustion. Occasionally associated with dysmenorrhoea, or irregular menstruation, I have seen it alternate with facial neuralgia. Over-fatigue or mental anxiety will precipitate an attack. In such cases little is to be made out by examination. There is no muscular wasting, and neither movement of the limb, nor pressure on the "tender points" elicits the exquisite pain accompanying the other conditions. The pain is intermittent, and the patient, although the attacks may be very severe, is quite comfortable between them.

Sciatic Perineuritis or Neuritis.

This is a disease of adult life, and in my experience four times as common among men as women. There is almost invariably a gouty or a rheumatic history. The ordinary pathological changes of neuritis have been observed when the nerve has been cut down upon for the purpose of stretching. Exudation and effusion have been found in the sheath, swelling and redness of the nerve trunk, and occasionally small haemorrhages, these changes being most marked at the level of the sciatic notch and at the middle of the thigh.

The disease is, then, primarily a perineuritis, and the pain and tenderness are due to the irritation of the sheath nerves. As the disease progresses the nerve fibres become involved in an interstitial inflammation, and a definite neuritis supervenes.

In cases of fully developed neuritis muscular atrophy, paresis, and the reaction of degeneration are present, with diminution of tactile sensibility, areas of anaesthesia, and hyperaesthesia, tinglings, pins and needles, formication, etc.

The exciting cause of an attack of sciatic perineuritis—and one attack predisposes to another—is in the majority of cases the exposure of the limb to local cold, not dry cold, but cold associated with wetting—for example, sitting on wet grass or upon a damp seat.

Special attention must be directed to the association between lumbago and sciatica. How common is the history of acute pain in the lumbar muscles, followed in two or three days by sciatic pain—in other words, a spread of fibrositis and involvement of the nerve trunk.

It is stated that direct pressure on the nerve by sitting in an uncomfortable position sometimes causes sciatica, as, for example, in the city clerk, dangling his legs from a high stool. In the case of two patients who had always been accustomed to wear woollen underclothing, the attack was attributed to changing to linen and silk respectively.

Secondary Group.

In this group are included all those cases in which the condition is due to involvement of the sciatic nerve by pressure, or the spread of inflammatory processes. Hence the importance of making a complete and systematic examination before diagnosing primary sciatica. It is stated that a rectum overdistended with scybalous masses sometimes exerts sufficient pressure to give rise to sciatica,

* Paper read before the York Medical Society on February 14th, 1912.

but whether this be so or not, it is at any rate quite sufficient to aggravate the condition if already present. Intra-pelvic causes which must be excluded are sarcoma of bone, carcinoma of the rectum and uterus, fibroids, ovarian tumours, and pelvic inflammation.

Growths of bone are readily detected by local examination. Sciatica is of particular importance as a symptom of recurrence after removal of a primary growth of the rectum or uterus (the cervix especially) when no local recurrence with discharge, etc., has occurred. Fibroids and ovarian tumours rarely give rise to sciatica, and then only when there is impaction in the pelvis. Pelvic inflammation may be the cause, either by pressure or by the involvement of the nerve sheath by spreading inflammation. In the field of obstetrics, pain of the nature of cramp down one or both legs is quite common when the head enters the pelvis. Sciatica or paralysis is rare, probably because the promontory of the sacrum and the pyriformis protects the plexus. Occasionally, however, in a small round pelvis, when the head fits the pelvic cavity tightly like a cork in the neck of a bottle, the lumbo-sacral cord is damaged by pressure against the pelvic brim. Agonizing cramp, with paralysis of the external popliteal branch, may result; this may occur also after delivery from pelvic inflammation. It may be noted that separation of the sacro-iliac synchondrosis during childbirth sometimes produces a lameness loosely simulating sciatica, which may persist for some time.

The secondary group also includes those cases of sciatica due to tuberculous or osteo-arthritic disease of the spine, bones of the pelvis or hip-joint. Special attention to the association between sciatica and osteo-arthritis of the hip-joint has been directed by Dr. William Bruce in an address on "The Real Nature and Rational Treatment of the Disease";[1] and later, in a paper entitled, "The Relation between Sciatica and Diseases of the Hip-joint,"[2] read before the Medical Society of London, Dr. Ironside Bruce brought forward a number of radiograms, revealing evidence of chronic arthritis in patients who had the signs and symptoms of sciatica. A partial form of osteo-arthritis involving one hip-joint alone is not uncommon, and I have notes of nine such in my series of cases of so-called sciatica. All these cases were elderly men, and there was a definite history of trauma in each. The sciatica was of a chronic nature, had never been acute, the patients walked with a limp, and there was present in all more or less muscular wasting of the buttock.

A highly nervous lady, 40 years of age, complained of very severe sciatic pain in the left leg, which I was inclined to consider a neuralgia. An *x*-ray examination revealed the presence of a bony outgrowth from the femur at the junction of the upper with the middle third, and periostitis.

It is always advisable, and particularly in cases which prove intractable, to have a radiogram taken.

The exclusion of diseases of the spinal cord, peripheral neuritis, Bright's disease, diabetes, etc., does not as a general rule present much difficulty, as primary sciatica usually involves one side only.

A gentleman, 45 years of age, who had been confined to his bed for three weeks previously, came to Harrogate to take treatment for what appeared to be a very acute attack of primary sciatica in the left lower extremity. Four months before I saw him he had contracted gonorrhœa, but the urethral discharge had ceased. There was no muscular wasting, but the slightest movement or exposure of the limb caused excruciating pain, only to be controlled by hypodermic injections of morphine. Five weeks later he began to have pain in the right leg, bladder symptoms quickly followed, and the case soon presented the clinical picture of myelitis, from which he died five months after the onset of his illness.

The pains of tabes dorsalis are often felt in the sciatic area, but their fleeting character and the presence of other signs of locomotor ataxy should prevent any error in diagnosis.

Treatment.

In acute cases absolute rest in bed is essential, and the problem is how to make the patient as comfortable as possible. A water bed is advisable, and the sheets must be either woollen or cotton, not linen. Woollen socks and pyjamas should be worn. I usually fix the limb with a long Liston splint, which adds greatly to the comfort of the patient when he has become accustomed to it, and does away with the startings which are such a painful feature of the disease. Should this prove unsatisfactory, slinging the leg in a Salter's fracture cradle is worthy of a trial. It sometimes acts admirably, and has the additional advantage of permitting local treatment to be adopted more readily. The limb must be kept very warm. It is a good plan to swathe the leg in ordinary or thermogen wool, fixing with a domette bandage.

In subacute cases a few days' rest with the limb on pillows and between sandbags may be necessary.

It is wise, and particularly in gouty cases, to begin the treatment of acute cases with a dose of calomel, followed by a saline in the morning. As to drugs in general, their effect is very uncertain in sciatica, but in many cases they are most beneficial. In acute cases the salicylates in combination with the bromides and tincture of gelsemium answer well. Aspirin appears to have a specific effect in relieving the pain of fibrositis; and pyramidon, exalgin, acetanilide, and phenalgin are worthy of mention. Potassium iodide is a most valuable remedy, more particularly in chronic cases, especially when combined with the glycerophosphates. Tonics (iron, arsenic, strychnine, etc.) are very necessary when the acute symptoms have subsided.

Regarding local treatment, many pin their faith to flying blisters; the disadvantage is that if not effective they interfere in a measure with the adoption of other methods of treatment. Hot linseed poultices, antiphlogistine, a canvas bag containing mustard bran, electra cloth applied along the course of the nerve, are all good methods of counter-irritation.

Anodyne colloid is excellent for relieving local pain, and particularly if the alkaloids it contains are brought into activity by applying a piece of moist spongioline over the collodion film. The A.B.C. liniment or the compound chloral paint (which contains chloral hydrate, camphor, menthol, and thymol) painted on the painful areas with a brush form valuable remedies. Methyl salicylate, to which may be added tincture of iodine and menthol dissolved in parogen, or made into an ointment with vasogen, is a favourite application of mine. Mesotan, or 1 to 3 drachms of spirosal in ½ oz. of rectified spirit, are of service in fibrositis. Morphine may be administered hypodermically, but the danger of the patient acquiring the habit of self-administration, particularly in neuralgic cases, must not be overlooked. For the first few nights of an acute attack suppositories containing ½ grain of morphine act well. But I know of no remedy of greater value in relieving the very acute pain than cocaine administered hypodermically in doses of from $\frac{1}{4}$ to ½ grain. This should be injected at the seat of the pain but not into the nerve. It is said that injections of plain water often gives relief, but this cannot be in cases of acute sciatic perineuritis.

Dr. Wilfred Harris[3] reports good results from deep injections of strong alcohol "in cases of fibrositis of the buttock which simulate sciatica, and may precede, and then accompany, sciatic perineuritis." He points out the importance of not injecting the alcohol into the nerve, or paralysis will follow. He also uses a modification of Lange's infiltration of the nerve with warm normal saline solution and eucaine, reporting in a series of 34 cases of chronic sciatica 24 completely cured and 3 considerably improved. Fibrolysin I have never found of any service.

Balneological Treatment.

I do not propose dealing with the internal administration of natural mineral waters, but wish to draw attention to the various methods of balneotherapy which are adopted at Harrogate. Naturally, the majority of cases which come under observation are of the nature of chronic sciatica.

In the Greville hot-air bath, designed for the application of local dry heat, the heat is generated by the passage of an electric current through high-resistance wires fitted in suitably shaped cases and insulated from the patient, and conveniently adapted for application to the lumbar region and the lower extremity affected. The limb is lightly covered with a layer of lint and submitted to a temperature of 300° to 400° F. for from twenty to sixty minutes. In the Dowsing radiant light and heat bath the heat is generated by electric heat lamps fitted in specially made aluminium reflectors. The patient lies on an asbestos sheet placed on a bed surrounded by the lamps, the body being covered with asbestos to keep in the heat. The temperature is raised to 250° to 350° F. It is claimed that the addition of the light to the heat rays increases

their therapeutic effect. Both the Greville and the Dowsing baths are useful in relieving pain, but in the treatment of chronic cases I have found them disappointing.

Hot sulphur immersion baths are often given combined with subsequent local treatment consisting of mustard packs placed down the sciatic nerve.

Mud baths, which are to all intents and purposes a universal poultice, are one of our most valuable methods of treatment. They are made from peat obtained from the Yorkshire moors; it is broken up in a mechanical mixer to the consistency of thick pulp, and afterwards raised to the required temperature by superheated steam.

Electrical Treatment.

For cataphoresis, the skin must first be cleansed with ether soap, and dried, any abrasions present being covered with a film of collodion. A leaden electrode, 8 in. to 12 in. long by 4 in. wide, and covered with eight to twelve thicknesses of lint soaked in a 1 to 2 per cent. solution of chemically pure sodium salicylate, is fixed along the course of the sciatic nerve over the lower part of the buttock and the back of the thigh. It is connected with the negative pole of a galvanic current. The inactive pole, which should be the larger of the two, is likewise covered with several thicknesses of lint soaked in a saturated solution of lithium carbonate, and placed in a convenient situation, for example, across the shoulder blades, and afterwards connected with the positive pole. Salicyl ions are electro-negative, and consequently flow from the negative to the positive. The current strength is increased until the patient feels it; in practice 1½ to 2½ milliampères per square centimetre is the strength of current employed. It is not satisfactory to apply the inactive electrode in the neighbourhood of the ankle, because of the unevenness of the surface and the consequent difficulty of preventing electrolysis. As an alternative to this, if it be desired to confine the flow of the current to the affected limb, it is a good plan to immerse the foot and the leg up to the middle of the calf in a weak solution of lithium carbonate contained in a deep foot cell, this being connected to the positive pole of the galvanic supply. If a continuous current from the mains is available, all that is necessary is a shunt switchboard fitted with a milliampèremeter; but if the town's supply be an alternating current, a rotary converter to transform the alternating to a constant current will be required. If no electricity be available, a battery of 20 to 30 dry cells, fitted in a suitable case, with double cell selector, and milliampèremeter is all that is necessary. This forms a rational, and in my experience a very successful, method of treatment of chronic sciatica. Where the condition is associated with lumbar fibrositis, the administration of iodine by ionization, using a 1 to 2 per cent. solution of either sodium, potassium, or lithium iodide, is more useful than the salicylates.

The high-frequency current is sometimes of service in cases of sciatic neuralgia. It is usually applied by auto-condensation, followed either by bipolar massage or the *effleuve*. For the former the patient lies on his side on a couch, holding the handles in connexion with one pole of the high-frequency apparatus, the other pole being connected to the attendant by means of a wristlet. The method of administration is by light massage to the affected area through one thickness of clothing, causing slight sparking, which increases the local reaction. For the *effleuve* a brush with metallic points in electrical connexion with a high-frequency resonator is held 4 to 5 in. away from the patient and made to travel up and down the sciatic nerve.

If the galvanic current be adopted, and it can be used with advantage at the acute stage, the stabile electrode is placed between the shoulders and the mobile electrode applied to any specially tender spots. It may also be administered in a full electric immersion bath. The patient lies in a bath of plain or sulphur water at a temperature of 98° to 102° F., in which is fitted at the head a large copper electrode and at the foot two smaller electrodes, one on each side of the bath.

Dr. Schnee's four-cell bath, in which the hands and feet are placed in four separate receptacles containing water, is an improvement on the electric immersion bath in that the dosage the patient gets is under the absolute control of the operator. The cell containing the foot of the affected leg is connected to the negative end and those containing the other leg and arms to the positive pole so as to control the flow of current and local action to the affected limb.

The sinusoidal current, which is an alternating current and differs from the galvanic in that its polarity changes with great rapidity, is chiefly indicated in cases of sciatic neuritis, the galvanic in sciatic perineuritis.

Massage douching, on the Aix or Vichy principle, is so well known that no description is necessary. Combined with the Scottish douche, alternating currents of hot and cold water on the spine and leg, it forms a valuable method of treatment in chronic cases, but should not be permitted until pain and tenderness have disappeared. The same remark applies to dry massage, which is of distinct service in preventing the formation of adhesions. The masseur must proceed very cautiously, confining his attention at the beginning to attempting to improve the nutrition of the muscles. Passive movements should be employed as soon as possible. With the patient in the recumbent posture, the thigh is flexed upon the abdomen, first with the leg flexed, and then with the leg extended. Abduction and external and internal rotation in various combinations are part of the daily treatment. With improvement these movements become less passive and more active. A very useful exercise consists in rising from a low couch or seat, on which the patient sits with both feet on the ground, at first with the aid of the masseur, and as the need for assistance lessens steadily decreasing the height of the seat until he can rise unaided from a footstool.

And, lastly, in cases which have resisted all other methods of treatment, good results have been obtained from surgical treatment, and particularly so when dense adhesions have been discovered between the nerve sheath and adjacent tissues. The beneficial effect of nerve stretching is largely due to the breaking down of such adhesions. Of acupuncture I have no personal experience, save that I have seen several patients who have undergone this treatment with temporary relief only.

Regarding after-treatment, the patient must be cautioned to keep the affected limb very warm, and there is nothing better than woollen combinations made of double thickness in one leg. Cold, damp, or hard seats must be avoided, and, inasmuch as the exciting cause in so many cases has been in my experience sitting on the cold seat of draughty waterclosets, I always advise the patient to use a felt cover.

The cure of cases of chronic sciatica is oftentimes a very gradual process. In the beginning, with the patient lying on his back, it may not be possible, holding the heel, to raise the foot in the slightest from the couch without causing pain: but as the condition improves the leg can be raised higher and higher, and this incidentally affords a rough and ready, but on the whole accurate, indication as to the extent to which progress in recovery has been made. It is also well to bear in mind that, though the patient may consider himself so, he cannot be said to be completely cured and altogether free from the danger of a relapse until the thigh with the leg fully extended can be acutely flexed upon the abdomen without causing pain.

REFERENCES.

[1] Dr. William Bruce, *Lancet*, August, 1903. [2] Dr. Ironside Bruce, *Transactions of the Medical Society of London*, vol. xxxi. [3] Dr. Wilfred Harris, BRITISH MEDICAL JOURNAL, October 2nd, 1910.

THE first International Congress of Comparative Pathology will be held in Paris in October next (17th to 23rd). The Congress, which is organized by the Société de Pathologie Comparée, will be under the presidency of Dr. Roger, Professor of Experimental Pathology in the University of Paris. Professors Bouchard and Chauveau are honorary presidents. In addition to them, the following are among the members of the Comité de Patronage: Professors Landouzy (Dean of the Paris Faculty of Medicine), Professors Achard, Blanchard, Chantemesse, Delbet, Letulle, Albert Robin, Widal, of Paris; Drs. Hallopeau, Jeanselme, Netter, and Tuffier, of Paris; Drs. Roux, Metchnikoff, and Borrel, of the Pasteur Institute, Paris; Nicolle, of the Pasteur Institute, Tunis; and Professor Calmette, of Lille. The Secretary of the Committee is Dr. Garnier, Physician to the Paris Hospitals; the General Secretary of the Congress is M. Grollet (42, Rue de Villejust, Paris), to whom all communications relative to the Congress should be addressed.

TRAUMATIC OSSIFICATION OF TENDON.

BY

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UNDER this term one would first associate the ossification of the adductors met with in horsemen, and which receives the special appellation of "rider's bone." Or, again, we may think of another common example occurring in the deltoid muscle, usually seen amongst soldiers, the "drill bone."

These two conditions are explained by the detachment of periosteal fibres consequent upon some strain; these fibres still continue to perform their functions, and so give rise to the bony formation found in the tendon of the muscle. Apart from the foregoing, bony conditions occurring in either the tendons or muscles are rarely met, so it may be of interest to record the history and histology of the following example.

In the first place, allow me to state that I wish to demonstrate not a periosteal bony formation, but an actual metamorphosis of tendon fibres into cancellous bone.

A. S., mate on a coal barge, six months before he came under my care met with an accident as the result of a

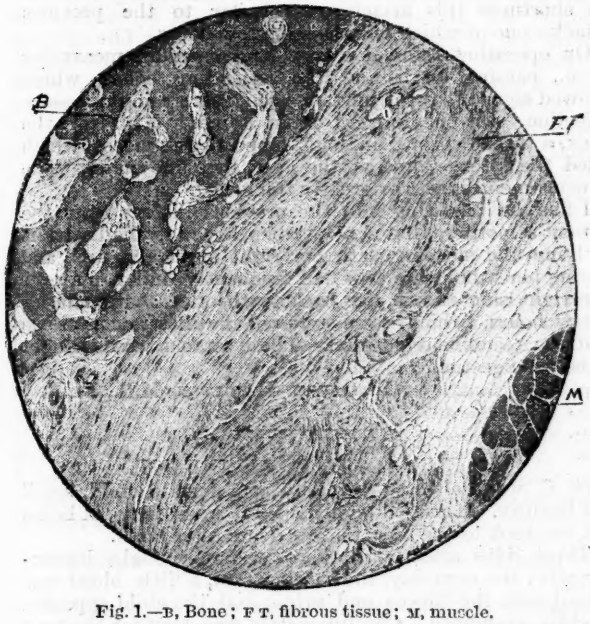


Fig. 1.—B, Bone; F T, fibrous tissue; M, muscle.

collision between his boat and one of the many narrow bridges crossing a canal. He was wedged between the barge and the bridge, being caught chiefly about the pelvis. Four days after this accident the patient was admitted to hospital, and it was discovered that besides contusions and abrasions of the anterior abdominal wall, he had, on *x*-ray examination, a fracture of the left ala of the pelvis. The fracture was triangular in outline, having a base of ¾ in. situated at the crest of the ilium.

The patient received the usual treatment, the pelvis was immobilized as far as possible, and he was kept for six weeks in bed. In eight weeks from the date of admission he was discharged with good union and free from pain. Subsequently for two months his condition progressed favourably, but after this, and indeed for the next two months, a most excruciating pain was felt in the upper and outer side of the left thigh, over the cutaneous distribution of the external cutaneous nerve, so that six months after the accident he was again admitted complaining of this pain, which chiefly made its appearance at night. On examination it was seen that the bone in the region of the fracture was greatly thickened, upwards of 3 in. or 4 in. in diameter, in fact, a most exuberant callus formation; whether due to an "ossific diathesis" or some clinical condition not easily explained it is difficult to say.

He stated that his father or mother, brothers or sisters, never had any broken bones, so one cannot determine whether any bony tendency runs in the family or no.

This pain in the upper and outer side of the thigh increased, so that operative measures were adopted. An extensive incision was made, and we found the external cutaneous nerve raised up on the summit of a huge lump of callus; the irritation so produced no doubt accounted for the pain.

This exuberant cancellous bone was fully dealt with, and the nerve relieved. Coming now to the item of striking interest in this case—that is, over the left inguinal region there was an isolated plate of bone imbedded in the tendon of the external oblique muscle and closely incorporated with its muscular fibres. This plate of bone had no connexion with the exuberant callus of the pelvis, but was completely isolated, and indeed was underlying the contused area on the skin following the accident.

Now I feel assured that this plate of bone was the result of the injury; in other words it was traumatic in origin. Again, it may be asked whence it cometh, from what structures did it arise, whether from tendon, muscle, or perhaps a new bony formation? The accompanying photomicrograph will speedily dispel all uncertainty, showing clearly that the bone is formed from the tendon fibres; at any rate they are replaced by bone of a cancellous type. Therefore it must be admitted that we have here an example of traumatic ossification of tendon fibres arising as a most unusual sequela complicating fractured pelvis.

NOTES ON AN INTERESTING CASE OF COLOUR BLINDNESS.

BY A. RUDOLF GALLOWAY, M.B., C.M., M.A.,

OPHTHALMIC SURGEON, ABERDEEN EYE INSTITUTION.

A LINE fisherman, aged 27, came to the Eye Institution on February 21st to have his colour vision tested, as he wished to apply for a skipper's certificate. He had not previously entered for any eyesight examination, and had not had any practice with coloured wool tests. He had been at sea for a number of years, and was considered to have excellent form and colour vision. In any difficult situation the skipper always sent for him, as he could detect lights sooner than other fishermen.

Form Vision.

His form vision was normal, namely, $\frac{6}{6}$ in each eye with no manifest hypermetropia.

Colour Vision.

TEST I.—The colour test was begun with K. Scott's asbestos chimney over an Argand burner. All the coloured glasses were repeatedly named correctly, clear or obscured by the ground glass disc, and with any size of aperture down to 2 mm., the test being applied at 3 metres distance.

The white or yellow light of the open aperture was correctly named. When, however, the ground glass disc was shown, the colour named was green, and this mistake was made repeatedly.

TEST II.—The second test used was Holmgren's wools.

1. *Pale Green:* The colours selected were pale blue, light and dark greys, also brown.
2. *Rose-pink:* Mostly pure pinks were chosen, but there was one confusion colour.
3. *Red:* Most of the reds were picked up, but also one or two dark browns.

The following additional Holmgren skeins were used as tests:

(*a*) *Medium Green:* This was matched correctly.
(*b*) *Pale Blue:* This was assumed to be green, and greys, browns and greens were selected.
(*c*) *Medium Blue:* Matched correctly.
(*d*) *Greyish-white:* With this was matched nearly all the pure greens, also greys, one or two blues, and a yellow-green.

TEST III.—The third test applied was Edridge-Green's wools:

1. *Orange:* Yellows only selected.
2. *Violet:* Blues, with one or two violets.
3. *Red:* Matched correctly.
4. *Blue-green:* Greys, greens, and yellows chosen.

The following additional skeins were used as tests:—

(*a*) *White:* Pinks only taken.
(*b*) *Light Grey:* Blues chosen.

TEST IV.—The fourth test was Edridge-Green's glasses with Thorington asbestos chimney, the aperture being 10 mm. at 3 metres distance:

(*a*) Thin—Neutral 1, named green.
(*b*) Medium—Neutral 2, named green.
(*c*) Thick—Neutral 3, named green.
(*d*) Neutrals 1 and 2 (which give red), named green.
(*e*) Ground glass, named green.
(*f*) Ribbed glass, named green.
(*g*) Red glasses, all three shades named correctly.

(*h*) Dark red with neutrals 1 and 2 was blank, no red being visible to the man when it was seen by myself.
(*i*) Dark red with ribbed glass, named green.
(*j*) Dark red with ground glass, named green.
(*k*) Orange, named green.
(*l*) Green, named correctly.
(*m*) Blue-green, called light blue.
(*n*) Blue, named correctly.
(*o*) Violet, called "mauve or blue."

TEST V.—The fifth test was the spectrum as seen in bright daylight through a small spectroscope. The only colours seen were three in number, and were called "red," "green," and "blue."

The chief points of interest in this case are:

Test I. The coloured lights, however small and clear or obscured, being named correctly, while obscured white was invariably called green.

In Test II, if decided shades were used as tests, the matching was good, and would undoubtedly satisfy many examiners. The best colour in Holmgren's wools to show the defect is probably a greyish-white, which is not one of the standard tests.

In Test III the failure to select orange, and the confusion of blue and violet, are important points, while blue-green must have been very imperfectly seen.

In Test IV the name green was applied to all neutrals, to orange, also to ground and ribbed glasses alone and with dark red, while the red given by neutrals 1 and 2 was called green. The fact that dark red with neutrals 1 and 2 was not seen shows that there must be some shortening of the red end of the spectrum, in addition to the other defects.

Test V, in which he stated positively that there were only three colours, considered along with the other tests, indicates that the case is one of trichromic colour blindness with shortening of the red end of the spectrum, as described by Dr. Edridge-Green.

I have no doubt that this man is unfit to be entrusted with the care of life at sea; it is also evident that something more than the ordinary Holmgren tests in the hands of laymen is required to detect his deficiency.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

HAEMORRHAGE FROM THE INTESTINAL MUCOUS MEMBRANE IN MEASLES.

A BOY aged 7 years, whose father had died of pulmonary tuberculosis, had a typical attack of measles; the rash was well out, and there were slight bronchial symptoms, but the case seemed mild. I was informed on the fourth day of the attack that the child had had attacks of vomiting without relation to food (milk and soda water). Having already noticed that the epidemic which is raging here was occasionally ushered in by intestinal symptoms—vomiting and diarrhoea—I took no immediate notice of this symptom. The friends sent for me during the afternoon of the same day and showed me about two ounces of liquid blood, bright red in colour, not clotted, with shreds of mucus and typical sago-like masses of mucus, which they said the child had passed at stool. The child looked bright, but slight pain on pressure was elicited over the right iliac region. The patient complained of pain in the lumbar region of a colicky nature, and in front over the caecum. During the attacks the child would jump up in bed and demand the bed-pan. The haemorrhage continued in small quantities hourly for the next twenty-four hours in spite of treatment by an ice-bag to the abdomen and pulv. cretae aromaticus cum opii, grains iij every two hours. No sign of faeces was noticed in the discharge passed after each attack of pain; there had been no catarrh of the intestine before the haemorrhage occurred. I came to the conclusion that the haemorrhage was due to hyperaemia of Peyer's patches, sometimes met with in measles, especially the haemorrhagic form. Having made this diagnosis, and as the blood showed no signs of coagulation, I prescribed calcium chloride gr. v, tinct. hamamelidis ♏ iv, liquor morphinae hydrochloridi ♏ ij, every two hours. The haemorrhage gradually ceased during the next twelve hours, save for a slight discharge of blood-stained mucus which came away involuntarily on the bedclothes. The child had a normal movement of the bowels on the third day from the commencement of the haemorrhage, of a natural colour but smelling badly. Prolapse of the rectum, brought on by straining during the attacks of colicky pains, ensued, but the boy made a good recovery.

JOSEPH STARK, L.R.C.P.,
Winchburgh, Linlithgowshire. L.R.C.S.Edin.

THREADWORMS IN THE VERMIFORM APPENDIX.

I HAVE read with interest the notes on "Threadworms in the Vermiform Appendix," by Dr. Wilson of Tunbridge Wells, in the JOURNAL of April 13th. The following notes of a case on which I operated on April 9th, and found in the appendix *Oxyuris vermicularis*, may be of further interest to your readers.

Miss A. G., aged 21 years, had suffered during the last eighteen months from repeated attacks of subacute appendicitis. The cardinal symptoms of all the attacks were so indefinite that I was in doubt as to the correct diagnosis, and therefore the call for operation, but as the patient had a more severe recurrence on April 1st, with marked pain and tenderness over McBurney's point and in the lumbar region, I decided to operate when the symptoms subsided, which they did on April 3rd, the patient being up and downstairs when I visited her. I would point out that in its shortness this attack was similar to the previous attacks, one of which only lasted a few hours.

On operating I found a very long appendix, measuring 6½ in., passing up behind the ascending colon, which showed signs of recent inflammation, there being excessive injection. On opening the organ I found, 3 in. from the apex, a threadworm ¾ in. long, embedded in faeces, which filled the interior, and at the apex five fine hairs. The mucous membrane was greatly thickened.

I find, on inquiring into the previous history from the patient's mother, that A. G., when a child, "had a habit of lying and sleeping with her right leg drawn up," and during her whole life has had frequently dull pains over her right side and in her back, with often acute pain for a few hours, which were relieved by hot fomentations and the recumbent position. These attacks were thought to be "indigestion."

Hawick. J. OLIVER HAMILTON, M.B., Ch.B.

HAEMOPHILIA IN AN INFANT.

MRS. C. was delivered normally of a female child, small but healthy. It passed no urine till it was thirty-six hours old, but took to the breast a few hours after birth.

Three days after birth there was very slight haematemesis; the next day, the mother said, a little blood was mixed with the faeces and urine, and the child appeared slightly jaundiced. Careful watch was kept for the next few days for further symptoms. When I called on the eighth day I was struck by the marked change since I saw the child the day before. Its face was now a deep lemon yellow, suggestive of intense anaemia. The "binder" was found soaked with blood, which had proceeded from the neighbourhood of the umbilical cord. No bleeding point could be found, but I transfixed and ligatured the remains of the cord, and applied a compress. The mother said she had noticed nothing wrong when she washed the baby half an hour before. The child was already comatose. Further bleeding occurred twice during the day from the same locality. The cord had practically come away.

At the necropsy, performed thirty-six hours later by Mr. W. J. Heslop, F.R.C.S., several bruises under the skin were found. All the organs were normal, but very pallid and bloodless. The ventricles were practically empty save for a little uncoagulated blood. The liver had not the yellow colour suggestive of icterus neonatorum. On opening the skull the space between the brain surface and the membranes was filled with thin uncoagulated blood, but the brain substance itself was bloodless, the blood evidently having oozed out from the vessels. The weight of the child was 4½ lb.

Mr. Heslop came to the conclusion that death was due to a true haemophilic condition. There was no fever and no suspicion of specific disease in the parents, who are both healthy. The case is thus differentiated from the haemorrhagic diseases of the newborn described by Osler.

Cheetham Hill, Manchester. S. DANZIGER, L.M.S.S.A.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

NORTH OF ENGLAND BRANCH: NEWCASTLE-UPON-TYNE DIVISION.

THE March winter scientific meeting was held at the Royal Victoria Infirmary, Newcastle-on-Tyne, on Friday, March 15th, when seventy medical men attended, Dr. JAMES DON being in the chair.

Auricular Fibrillation.

Dr. W. E. HUME said that the introduction of graphic methods into the study of the cardio-vascular system had advanced our knowledge of the mechanism of the normal and pathological heart; that now it was possible to assign most irregularities of the pulse to a particular abnormal focus in the heart. A foundation had been made for the better observation of the effects of treatment in heart failure. A definition of auricular fibrillation was then given, and 53 cases were shortly analysed. Tracings were thrown on the screen showing normal jugular pulses; this was followed by a series of tracings from cases of auricular fibrillation. In the latter stress was laid upon the absence of the large "A" wave seen in the normal tracings and upon the complete irregularity of the pulse. It was then pointed out that most cases of auricular fibrillation could be diagnosed by means of the fingers alone. Diagrams were shown illustrating the effects of the administration of digitalis in cases of auricular fibrillation. Some of these effects were compared with those obtained in heart failure with a normal rhythm. The principles of the administration of digitalis were briefly referred to. Lastly, the presence of auricular fibrillation as it affects prognosis was discussed.

Ectopic Gestation.

Professor RANKEN LYLE stated that the diagnosis of this condition before rupture was a matter of great importance, and with a little care there was not much difficulty in the diagnosis. After detailing the symptoms and emphasizing the most important, he pointed out that ectopic gestation was most frequently mistaken for incomplete abortion, and often treated as such until the more serious symptoms occurred and the actual condition was recognized. Dr. Lyle showed a large number of specimens, including one of ovarian pregnancy and a fetus which was removed from the abdominal cavity at full term.

Practical Points in Connexion with the Urinary Tract.

Mr. CLAY first showed pictures illustrating the structures in relation with the kidney when in its normal position. He pointed out how much more accessible the pedicle of the kidney was when approached from this point, and that it was advisable to bear this in mind when, from the large size of a renal tumour, difficulty was anticipated in getting at the pedicle of the kidney. Although these were the relations of the kidney when normally placed, the kidney was one of the greatest wanderers of all the abdominal viscera. He showed a skiagraph of the kidney which he had distended with collargol injected through a ureter catheter. In this way, by means of the ureter catheter, not only by drawing off a sample of urine, could it be made out what the kidney was doing, but the exact position and size and shape of the pelvis of the kidney could be made out. He showed skiagraphs of stones in the lower end of the ureter—one from a child, the other from a woman—in both of which the stone could be felt by pelvic examination, illustrating the importance of not neglecting the old and tried methods of physical examination. He related a case in which a kidney affected by congenital disease had been ruptured by a fall from a bicycle, and in which the kidney had been treated extraparietally and only returned to its bed when all danger of hæmorrhage had ceased. He showed lantern slides of the bladder and urethra, and laid stress on the fact that it was very necessary to remember that patients with either complete or partial obstruction of the outlet from the bladder often never complained of any urinary trouble, and that it was necessary to be on the look-out for the condition if it was not to be overlooked. In illustration of this, he showed a bladder, the result of prolonged retention, in which the patient appeared to be suffering from dilated heart and made no complaint of any urinary trouble. He related other cases in which intestinal obstruction was the prominent symptom of the renal insufficiency resulting from urinary obstruction.

Ancient and Modern Prescriptions.

Mr. SYDNEY DUNSTAN, M.P.S., F.C.S., read a paper on ancient and modern prescriptions. He thought a better name would have been Ancient and Modern Pharmacy. On this subject a book entitled *The Chronicles of Pharmacy* had been published by Messrs. Macmillan and Co., to which he was indebted for much information, and which might be consulted by those who desired to follow up the subject. The earliest people who claimed to be able to cure disease were called herbalists, and in many cases were women, but more often priests. The records of this art and mystery went back to the remotest periods of ancient history. Soon after finding out some of the properties of herbs they began to employ preparations from them for internal use. Thus this sacred art, surrounded by mysteries and superstition, was introduced. The earliest writings relating to pharmacy could be seen in the British Museum; many of them consisted of Egyptian prescriptions, dating somewhere about 2,000 years before the birth of Christ. George Ebers, the great Egyptologist, visited Egypt in 1872, and, after making extensive searches and inquiries, was ultimately successful in obtaining from an Arab a genuine papyrus which he had discovered in the Theban Necropolis in a metal box between the knees of a mummy. These writings had proved to be of great value in the delineation of the medical customs of that time. The writing on this material was in black ink, but other headings were in red, and were supposed to date somewhere about 1550 B.C., which, according to Scriptural chronology, corresponded to the 25th year of the life of Moses. The following directions show how the Egyptian physicians diagnosed liver complaints:

> When thou findest one when eating, he feels a pressure in the bowels, and the stomach is swollen, feels ill while walking: look at him when lying outstretched and if thou findest his bowels hot, and a hardening in the stomach, say to thyself, "This is liver complaint"; then make a remedy according to the secrets of botanical knowledge, from nuts and dates pounded and mixed with water, the patient to drink on four mornings to purge his body, then after, if thou findest both sides of the bowels, namely, the right one hot and the left one cold, then say, "That is bile": look at him again, and if thou findest the bowels entirely cold, then say to thyself, "His liver is cleansed and purified, he has taken the medicine, and the medicine has taken effect."

Superstitious notions in connexion with medicine were not more apparent in those days than they were in any British herbal of 300 or 400 years ago. Charms, enchantments, amulets, and all the armoury of witchcraft and magic had been intimately mixed up with medicine and pharmacy in all countries and in all ages. Hermes and Soloman were famous among the early practitioners and teachers of magic, and it followed that those who made their living out of the superstitions of the people pretended to have their knowledge and practices from those great heroes of the past. Among some of the New Zealand natives, for example, it was believed that a separate demon existed for each disease, each of these demons having something that would please or frighten him, so that amulets, charms, etc., came into use. In North America the Indians attributed all diseases to one evil spirit only; consequently their treatment of complaints was all the same. The belief of the savage or untutored races in demons which caused disease was natural. It would be useless to relate at any length the number of silly superstitions which had existed in quite modern times, and existed at the present day. After referring to the perpetuation of Galen in "galenical" preparations, Mr. Dunstan went on to say that Paracelsus and Culpepper, who lived at a much later period, also deserved a place among the masters of pharmacy. Paracelsus was born in 1493, and was the first physician to put forward the doctrine that life processes were chemical—therefore, they must look to chemistry for remedies to cure disease. Culpepper, who was born in 1616, was also noted for his pharmaceutical skill and his cleverness in criticizing the first and second editions of the *London Pharmacopœia*. The College of Physicians was incorporated by charter in the

reign of Henry VIII (1518), and the first *London Pharmacopœia* was introduced in 1618. That production did not err on the side of condensation; it comprised 1,028 simples and 932 preparations and compounds; 211 of these preparations had more than ten ingredients in each. Some of the items used were as follows: Worms, frog's spawn, fox's lungs (this was a popular remedy for asthma in the form of a syrup), blood of the badger, bull, cat, dog, goose, hare, man, bones of the hare, pig, stag, and the triangular bone of the human skull. "Liquor cranii humanii" was a highly prized remedy; it was prepared from unburied skulls, those of criminals for preference. The druggists in London sold skulls upon which had grown a little greenish moss because it resembled the moss which grows on the oak. These skulls mostly came from Ireland, where they frequently let the bodies of the criminals hang on the gibbet till they fell to pieces. The market price of skulls at that time varied in London from 8s. to 11s. each; those with plenty of moss on made fancy prices. Also used were coral white and red, crabs' claws, crabs' eyes, crayfish, cuttlefish, excrements of the cow, horse, mouse, pigeon, sheep, and wolf; powders of precious stones, pearls in particular; viper's flesh. Both in ancient and modern times vipers have been held in the highest esteem for their medicinal virtues; vipers' fat, vipers' wine, are used to this day in some remote parts of Britain. Vipers used in medicine were of the common variety, commonly known to-day as adders, *Vipera communis*. Quincy (1728) had great confidence in their virtues. He wrote:

> That they are Balsamic and greatly Restorative is confirmed by long experience, for we have many instances in Physical Histories of persons arriving at an healthful old age by their frequent use.

In a local paper only a few weeks ago there was an account of a snake farm in America where they had 30,000 snakes, which were kept for procuring the venom for medicinal use, so it seemed that the old theory was being revived. After the first *Pharmacopœia* had been several times reprinted a new one appeared in 1650. Tolu, benzoin, jalap, and steel wine were added. The fourth edition appeared in 1721, the fifth in 1746, when tinctures now came into favour, the sixth in 1778; the College claimed to have paid special attention to the advances made in chemistry and pharmacy, and to have provided that very few of the former superstitions should remain; bezoar stones, viper's flesh, and some other substances were dismissed, but woodlice remained. The seventh edition appeared in 1809, the eighth in 1824, and the ninth in 1836; that work was well up to date, with notes indicating the methods of ascertaining the purity of medicines, better methods for preparing chemicals and compounds, and the introduction of the most of the important new products, such as the alkaloids of morphine, quinine, and strychnine. The tenth and last of the *London Pharmacopœias* was published in 1851; chloroform, cod-liver oil, ext. nux vomicae, atropine, and ammonia citrate of iron were the principal novelties now made official. The Medical Act of 1858 authorized the fusion of the *Pharmacopœias* of the three kingdoms, and assigned the task of carrying out this work to the General Medical Council created by that statute. The first *British Pharmacopœia* was issued in 1864. Three great achievements characterized pharmacy of the nineteenth century: first, the discovery of alkaloids in the early years, anæsthetics in the middle periods, and of synthetic products in the latter years. From a pharmacist's point of view anæsthetics are about the most troublesome class of preparations he had to deal with, and required constant analyses. The past fifty years had witnessed a very great activity among investigators in every branch of science. It was probable that no art had gained such valuable knowledge through experimental research as that of medicine. This satisfactory state of things had been brought about not only by direct chemical observations made by medical experts, but also by the physiologist, bacteriologist, and chemist in their respective laboratories. It had been shown that under suitable treatment natural products, such as leaves, roots, and barks, might be made to yield definite chemical compounds. The vast strides made in organic chemistry had also enabled the chemist to synthetize large numbers of compounds possessing a known structure and known action, which action could frequently be modified by some alteration in the structure. These compounds had been classified according to their action, as antipyretics, diuretics, antiseptics, and hypnotics. At the present time the physician, instead of giving his patient large quantities of indefinite preparations containing numerous ingredients, which might be chemically or physiologically antagonistic to each other, was enabled to select some definite compound, of which he knew both the chemical constitution and the physiological action, but under the old conditions of polypharmacy it was a virtual impossibility to attribute the beneficial or harmful action of a preparation to any special ingredient. Apart from the great advances made in pharmacology, there had also been a distinctly forward movement on the part of the hospital pharmacist to place within the reach of the medical staff preparations of undoubted quality, strength, and elegance. Their aim was to make every product of the best material in the best possible way, so as to ensure exact dosage and constancy of physiological action.

Reports of Societies.

MEDICAL SOCIETY OF LONDON.

Monday, April 22nd, 1912.

DR. J. MITCHELL BRUCE, President, in the Chair.

The Vital Phenomena under Anaesthesia.

DR. DUDLEY BUXTON, in the course of a paper on the vital phenomena—nervous, circulatory, respiratory, and metabolic—occurring under anaesthesia and their relation to the safety of the patient, pointed out that the exigencies of modern surgery involved the necessity for a deeper narcosis than was adequate in the earlier times of anaesthesia, and frequently necessitated that this should be maintained for a long time. The phenomena he indicated embraced during the induction period have been studied and are now fairly well known, whereas the effects of prolonged action of anaesthetics upon vital tissues are less studied and less understood. Research has, however, shown that more or less profound effects are produced which, even if not shown to be inimical to life at the time of the operation, seem to be the cause of serious results later. To study them it is essential to differentiate the effects of therapeutic dosage—that is, dosage adequate to produce the necessary degree of narcosis—from those arising from toxic dosage—that is, dosage in excess of this. The known effects upon the blood, upon nerve cells, muscular structures, upon glands and organs, and the essential functions of the organism, were then brought under review, and it was shown that the intimate aggregation of the anaesthetic and the cells of the body resulted in an inhibition of function. In the case of patients already suffering from derangement of function—for example, blood disease, fatty degeneration, profound exhaustion, and so on—a maximal effect is brought about by a minimal action of a narcotic. Similarly, since blood and tissues are able to take in more and more anaesthetic, the longer the period during which they are subject to its environing influence the greater and severer are the effects. Dealing with the measures whereby such deleterious effects could be minimized, it was pointed out that cells part with the aggregated anaesthetic when the internal is greater than the external tension, so the indication is to lessen the strength or amount of anaesthetic when the requisite degree of narcosis is reached, and to lessen it still further as time elapses. Certain intercurrent results due to the effects of anaesthetics or the operation, such as lessened aëration, fall of blood pressure, depression of temperature, loss of blood and shock, being themselves dangerous to tissue vitality, must be watched for and counteracted. The effects of nerve shock during analgesia were dealt with, and their dangers in certain cases emphasized. It was finally urged that if the dangers of prolonged interaction of narcotics given in excessive quantities were more thoroughly understood and appreciated, and the necessary precautions, such as more careful preparation, selection of anaesthetic, and method and management of the narcosis adopted, the patient would be preserved from post-operative complications, and recuperation would be more rapid and complete.

Post-Anaesthetic Poisoning.

Mr. E. M. CORNER read a paper entitled, Some Remarks on Post-Anaesthetic Poisoning. It was based on an inquiry which was carried out at the Hospital for Sick Children, Great Ormond Street, but which was not yet completed. The condition could not be ascribed to the presence of any impurity in the anaesthetic, nor to the preparation of the child, nor to the method of administration of the anaesthetic. There was no constant predisposing condition, as far as could be elicited. The nature and duration of the operation were not to blame. It was probable that many of these factors had an obscure contributory power in its production. It was only an assumption that a close relationship existed between acetonuria and post-anaesthetic poisoning. Extreme fatty change in the liver was a constant feature, but it was doubtful whether it always accompanied acetonuria. It was possible that acetonuria was merely a symptom of a metabolic derangement, which was one of many contributing causes of post-anaesthetic vomiting. The safest method of inducing anaesthesia in children was the open ether method, to a child who had been carefully prepared with the addition of glucose to the diet for a few days previously, and who was given an injection of morphine and atropine three-quarters of an hour before the anaesthesia. Post-anaesthetic poisoning was a veritable scourge in a children's hospital, being very much more frequent than was commonly supposed, especially in its non-fatal manifestations.

ROYAL SOCIETY OF MEDICINE.

OBSTETRICAL AND GYNAECOLOGICAL SECTION.

AT a meeting on April 11th, Dr. AMAND ROUTH, President, in the chair, Mr. GLENDINING, in a paper on *Fibro-adenoma of the ovarian fimbria*, described 4 cases in which this new growth was found. All of them he showed might, in the absence of a critical histological examination, have been written down as instances of accessory ovarian tissue. A certain proportion of the reports of cases of accessory ovary were probably based on the error indicated. Dr. J. D. BARRIS, in a paper on *Haematuria in retroflexion of the gravid uterus*, after relating a case in point, said that in all the recorded cases of haematuria the complication had been caused by the accompanying cystitis. In his own case there was no evidence of cystitis whatever, for no micro-organisms were found either on staining film or after cultivation. The haematuria might have been caused by rupture of a blood vessel in the wall of the bladder, or by a tear in the lining mucous membrane, due either to over-distension or to the sudden relief of tension. Grosse was of opinion that a tear in a large varicose vein of the bladder was a common cause of haematuria during pregnancy, the varicose condition being due to the pregnancy, in the same way as haemorrhoids and varicose veins of the vulva. That this condition did occur had been demonstrated by Luys with the cystoscope, and was also observed at a later examination in the case recorded. Dr. WILLIAMSON reported a case in which the rupture of umbilical vessels during labour brought about death of the child. In such cases the insertion of the cord was velamentous. The insertion of the cord was velamentous only in about 0.7 per cent. of all human placentae. In twin pregnancies this insertion was more common. Von Winkel found it as frequent as 5 per cent. in the Dresden clinic. The essential anatomical feature of a velamentous placenta was the termination of the cord at some distance from the placental edge, the vessels diverging from one another and running over the chorion laeve for a greater or less distance. The vessels might take a wide sweep over the membrane, and eventually reach the placenta at a point on the margin most distant from the cord. If these vasa aberrantia ran in the portion of the membranes which lay in front of the presenting part of the child, they were termed "vasa praevia," and it was obvious that they might imperil the life of the child in two ways: (1) By being compressed between the presenting part and the wall of the lower uterine segment, and thus cause asphyxia; and (2) by being torn across when the membranes ruptured. The condition could be diagnosed during labour if pulsating vessels were felt running across the presenting pole of the bag of membranes. After bleeding had commenced the cases were usually mistaken for placenta praevia or accidental haemorrhage. In one or two cases suspicion had been aroused because in spite of severe bleeding the mother showed no signs or symptoms of haemorrhage. The presence of nucleated red corpuscles in the blood would confirm the diagnosis. Spiegelberg recommended that when the diagnosis was made early the membranes should be preserved intact till the cervix was fully dilated and the child then rapidly extracted. The author was of opinion that, when diagnosed early in labour, the best chance of saving the life of the child lay in Caesarean or vaginal section, but when the vessel had once ruptured the life of the child was so precarious that such operations would not be justifiable.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.

AT a meeting held on April 11th, Dr. ERNEST KNIGHT President, in the chair, Mr. GRAHAM SIMPSON, in a paper on the use of *Acute flexion in the treatment of fractures* of the lower end of the humerus, strongly recommended this method on account of its simplicity. An anaesthetic was absolutely necessary for the reduction, and the elbow should be bandaged in the position of acute flexion for ten days. The elbow should then be put up at a right angle, and the bandage should be dispensed with on the twentieth day. Passive movements were not only useless but harmful, and massage should not be adopted until movement had returned. Skiagraphy was very desirable, but by no means essential. In conclusion, he emphasized that an equally good result could be obtained by other methods, but that the advantage of this method was that it saved the doctor a great deal of bother and the patient much unnecessary suffering. He showed a typical case of a fracture treated in this way with a satisfactory result. Mr. G. H. POOLEY, in a paper on *Proptosis of the eyeball*, classified the causes as follows: 1. Pressure acting from behind, due to (*a*) inflammations, etc., which might be endogenous or exogenous; and (*b*) neoplasms, which might be cysts or tumours. 2. Action of unstriped muscle of orbit in toxaemias, as in Graves's disease. He then gave details of 16 cases which had been under his care in the last three years. These included inflammatory cases following injury, cases following nasal catarrh and influenza, 2 fatal cases after osteomyelitis and facial erysipelas, hydatid cyst of the orbit, recurrent sarcoma of accessory lacrymal gland, and empyema of spheno-ethmoidal cells. Mr. G. WILKINSON showed a molar tooth removed from the right bronchus by upper *Bronchoscopy*. Owing to its size it could not be drawn into the tube, which measured 9 mm. across. In withdrawing tooth and instruments together, the contraction of the rima dragged the tooth from the forceps, and it fell into the trachea, whence it was removed at the second attempt. Recovery was speedy and uneventful.

LIVERPOOL MEDICAL INSTITUTION.

AT a meeting on April 11th, Mr. ROBERT JONES, President, in the chair, Dr. MUSSON (for Dr. E. W. HOPE) read a note on the strike of last summer and its effect on the health of the city, when the strikers prevented the transport of food, scavenging, and even the sale of milk at the municipal dépôts. The effect was seen in the rise in the mortality from *Infantile diarrhoea* in those districts affected by the strike, while there was no corresponding increase in the unaffected districts. When the schools reopened towards the end of the strike there was four times the usual demand for free meals for the starving children. Dr. W. B. WARRINGTON, in a note on the results of operation in cases presenting the *Brain tumour syndrome*, said that the grave prognosis was mitigated by the following facts: Recovery without operation occurred; recovery occurred after simple decompression operation; in cases which were either cases of the condition of pseudo-tumour, or chronic acquired hydrocephalus, or serous ependymitis, or else such cases as chronic circumscribed arachnitis, a third modifying consideration was the frequency of cysts and their great curability. Dr. JOHN HAY reported 3 cases in which the *Bacillus paratyphosus* B was apparently the cause of a prolonged illness. The cases were sporadic and had no relationship one with the other. The diagnosis was based on the clinical condition and

on the result of agglutination tests carried out by Dr. Cox. Two of the cases were fatal, but no *post-mortem* examination was obtainable. Dr. R. STENHOUSE WILLIAMS, Dr. LEITH MURRAY, and Dr. A. J. WALLACE read a joint paper on *Coliform organisms in the female bladder*, their relation to pathogenic conditions, with a study of some cases treated by autogenous vaccines. Catheter specimens of urine were taken with due precautions from 26 cases showing no evidence of bladder or kidney infection; 11 showed *B. coli* before operation, 24 after operation. A further series of 12 specimens obtained by puncture of the bladder through the peritoneum showed *B. coli* in 4 cases. It was concluded, therefore, that the presence of *B. coli* in the urine did not necessarily prove that this was the cause of pathogenic changes. The inter-agglutinative reactions of the various strains of *B. coli* differed markedly; the use of stock *B. coli* vaccines was not, in the opinion of the authors, justifiable. The bacteriological analysis of 9 cases in which coliform organisms were giving rise to pathogenic changes showed that only in 1 case was true *B. coli* isolated; 2 others showed lactose fermenters not *B. coli;* 2 showed non-lactose fermenters, and 4 cases showed mixed growths, the non-lactose fermenters predominating. In these cases true *B. coli* was only on one occasion the single cause of the pathological condition. The results of treatment with autogenous vaccine in 13 cases of cystitis or pyelocystitis were detailed; 6 of these were very acute, and in all an immediate improvement was produced. The cure did not necessarily imply the sterilization of the urine. Cases of pyelocystitis in pregnancy proved the most resistant, and treatment as a rule had to be continued till after delivery. In subacute and chronic cases a marked and speedy improvement was forthcoming in every case, but the total elimination of pus from the urine was found to be a lengthy matter. Small doses (5 to 10 million) at short intervals were recommended in acute cases, and larger doses (50 to 300 million) at longer intervals in more chronic cases.

BRADFORD MEDICO-CHIRURGICAL SOCIETY.

AT a meeting on April 16th, Dr. S. LODGE in the chair, Mr. MCEWAN reported a case of *Antepartum haemorrhage treated by Caesarean section.* The patient was brought into hospital with slight haemorrhage and whilst under observation evidently had a large intrauterine haemorrhage, and the abdomen was immediately opened. The patient was transfused at the commencement of the operation. There was practically no haemorrhage during the operation, and the patient made an uninterrupted recovery. Mr. PHILLIPS, in a paper on *Some practical points in surgery*, recommended the "outer" incision in inguinal hernia, leaving intact the fascial bands crossing the inguinal canal, and the "inguinal" incision in femoral hernia, as this enabled the operator to tie the sac at the top of the neck just under Poupart's ligament. In cases of chronic constipation where, as shown by a bismuth meal, the cause lay in the rectum, which did not respond to the stimulus of the faeces, excellent results could be obtained by enemas of pure glycerine, beginning with 2 drachms and gradually replacing the glycerine by water till finally pure water only was given. In obstinate incontinence of urine in girls from 16 to 19 he advised an operation as follows: Dissect up the anterior wall of the vagina and then with a curved needle pass a silkworm-gut suture round the urethra close to the neck of the bladder. Pass a fine catheter into the bladder and tie the suture round it. Put two or three sutures in again lower down. After operation of circumcision Mr. Phillips recommended leaving the dressing on for a week. He said he always found the parts perfectly healed, and avoided in this way the painful daily dressing. Dr. EURICH showed a case of *General paralysis of the insane* in a girl aged 19.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.

AT a meeting on April 12th, Dr. JOHN BROWNLEE, Vice-President, in the chair, the following were among the exhibits:—Dr. R. SPEIRS FULLARTON: A boy aged 9½ years, who was demonstrated to the society on January 19th, with a large tumour of the right kidney, and had since been operated on at the Western Infirmary by Dr. James H. Nicoll. He had made an excellent recovery, and had gained notably in weight. The excised kidney and microscopic sections of the tumour, prepared by Dr. J. SHAW DUNN, were demonstrated, the latter's report being that the tumour was an embryonic adeno-sarcoma peculiar in being almost purely adenomatous in structure. Dr. J. MILL RENTON: A girl aged 8 years, who had sustained in August, 1911, a simple fracture of both bones of the forearm, and had since then, apparently in consequence of over-firm application of splints, suffered from symptoms of Volkmann's ischaemic paralysis, lividity and coldness of the hand, diminished sensibility to touch, marked flexion of the fingers, and wasting of the muscles below the level of the fracture. As the hand was quite useless when seen by Dr. Renton three months later, the treatment adopted was that of indirect lengthening of the tendons by shortening of both bones of the forearm. A length of 1¼ in. was removed subperiosteally and the bones reunited by silver wire. This procedure, followed by the use of splints, as advised by Mr. Jones, had given the child a very useful hand. Dr. DAVID WATSON, in a paper on the diagnosis of *Chronic gonococcal infections*, said that while acute gonorrhoea could be diagnosed from clinical symptoms, in chronic processes bacteriological investigation was essential. The complement deviation test was of proved value as an aid to diagnosis, though its use was subject to certain limitations. The same was probably true of the skin reaction to gonococcus vaccine. This was at present being carried out experimentally in the Glasgow Lock Hospital by the intradermic injection of from 10 to 20 million of dead gonococci of mixed strain. The result of the injection was a white urticaria-like bleb, followed in cases of gonorrhoeal infection by the appearance in a few hours of a surrounding area of intense redness slightly exceeding the bleb in size. This specific reaction reached its maximum in three days, but the redness remained marked till the sixth or seventh day, and slowly faded during the following week or ten days. The effect of the injection in a normal individual was at the most a slight redness, which reached its maximum within twenty-four to thirty-six hours, and faded to a barely distinguishable paleness in four to five days. In post-gonorrhoeal cases a modified reaction between the normal and the specific was obtained. Dr. W. S. SYME made a brief communication on an examination of 1,050 skulls, and some points of interest in connexion with the surgery of the ear and nose revealed thereby.

UNITED SERVICES MEDICAL SOCIETY.

AT a meeting on April 10th, Major C. E. POLLOCK, R.A.M.C., in the chair, Major H. E. M. DOUGLAS, V.C., in a paper on *The special weaknesses, from a medical aspect, of volunteer troops*, instanced, in the first place, enteric fever, and quoted statistics of various wars to show the enormous importance of this disease in war. The main stand-by for prophylaxis was inoculation, and arrangements would be made to carry this out on mobilization. The disturbance which resulted was so transient that this was feasible with regard to immunization against enteric fever. On the other hand, small-pox, which was another disease greatly to be feared in the field, required an immunizing process which would unfit the majority of men for the serious work of an army in the field for a fortnight, and on this account it was necessary to make every effort to secure revaccination of volunteer troops during peace time. That this was necessary was shown by the experience of the American Civil War, and more especially by the ravages which small-pox made in the badly-protected French army in the Franco-German War, where the deaths from small-pox were said to have reached 23,400 in the French army as against 278 among the carefully protected German troops. Sore feet were another great source of weakness in an army recently withdrawn from civil life, and for this the author advised that men should be encouraged to habituate themselves to the use of marching boots, and should be instructed in the care of their feet and the management of their boots. Heart strain also was likely to be extremely prevalent among troops suddenly put to the heavy physical labour of a soldier in the field without the regular and systematic physical training to which a soldier in the regular army was subjected; as a partial remedy for this he recom-

mended that as much as possible should be done to encourage the culture of physical fitness among men of the Territorial Force by the provision of gymnasiums, etc. An example of the effects of overstrain in physically untrained troops was given in the experiences of one of the volunteer concentration camps in the American Civil War, where, out of 4,901 men discharged for physical unfitness, 1,123 suffered from some form of organic disease and 1,200 from functional disease of the heart. The incidence of camp diarrhoea also was much influenced by the physical fitness or otherwise of the troops, as well as by the degree to which they were accustomed to accommodate themselves to the exigencies of camp life.

EDINBURGH OBSTETRICAL SOCIETY.

Ovarian Transplantation.—Dr. H. M. Church informs us that the condition which, during the discussion on ovarian transplantation before the Edinburgh Obstetrical Society on March 13th (BRITISH MEDICAL JOURNAL, March 30th, p. 726), he said might result from the removal of ovaries was rheumatoid arthritis, not osteomalacia. In support of his belief he referred to some experiments by Curatulo mentioned in Ritchie's book on osteomalacia. These experiments led Curatulo to believe that after removal of the ovaries oxidation of organic phosphates diminished and the phosphorus tended to accumulate in the bones in the form of phosphates of lime and magnesia.

Reviews.

THE PROBLEMS OF ASTHMA.

SPASMODIC disturbance of function, whether it affects the nervous, the circulatory, or the respiratory system, presents a never-ending subject for scientific speculation, aided or not, as the case may be, by physical observation. Numerous as have been the discussions and monographs on the subject of spasmodic asthma, no finality of agreement has yet been reached by those who have devoted many years to the study of the disease, except on one point. A recent correspondence in our columns has served to indicate the general opinion that the dyspnoea is due to narrowing of the smaller bronchial tubes, but the exact means by which such narrowing is brought about are variously stated.

The possibility is assumed by some authorities that irritation of the nerve centres, from a variety of causes, may induce acute spasm of the muscular fibres in the walls of the lesser bronchial tubes. Another view regards the bronchial narrowing as being due to turgescence of the mucous membrane, set up, like urticaria in the skin, by some subtle poison acting through the nervous system. A third theory is that so warmly advocated by Dr. J. B. BERKART as long ago as the year 1889, when the second edition of his book on *Bronchial Asthma* was published; the third edition,[1] recently issued, is now before us. To him asthma has always appeared to be essentially due to obstruction of tubes by an exudative process, often associated with catarrh, and only producing dyspnoea after a certain degree of obstruction has been set up. In support of this view he has now been able to bring together a series of seven *post-mortem* examinations of the bronchial conditions in patients who have died during or shortly after an asthmatic attack. Pathological evidence of this kind is as valuable as it is rare, owing to the fact that death so seldom occurs during a paroxysm of uncomplicated asthma. The cases quoted are the only records available over a period of twenty-five years, and they are all reported by observers whose accuracy cannot be impugned. Dr. Berkart long ago put forward the suggestion that this exudative catarrh might be caused by microbic infection, but clinical examination of the well-known mucous pellets, twisted tube casts and spirals, has not as yet proved the constant presence of any special form of micro-organism. Like other advocates who have warmly espoused a particular cause for many years, he is somewhat intolerant of opposing theories and stubborn facts, but the impartial reader will probably conclude that, like the disputants of old as to the colour of the chameleon, the supporters of the various theories are really concerned with several different aspects of the same phenomena.

While Dr. Berkart's theory, supported by pathological evidence, will suffice to account for one form of the disease, it would appear altogether inadequate to explain the absolutely sudden attacks, such as those described by Brügelmann and others, where the spasm arises in instant response to mechanical irritation.

Perhaps the most remarkable point of divergence in opinion among experts, as disclosed in the course of discussions and monographs, relates to the actual form of the dyspnoea. Is it inspiratory or expiratory? Here, again, the differing authorities are probably describing different phases of the same disease. To quote the dictum of an old clinical physician of long experience, the patient's difficulty in asthma is to get the air into his lungs; in emphysema he has to labour to get it out. But the average case of spasmodic asthma is usually complicated by some chronic degenerative changes in the lungs and bronchi, and often in the heart also, and hence the form of the dyspnoea is liable to great variation.

Of all distressing symptoms, breathlessness is the worst, and it is not much to be wondered at that even medical patients themselves are ready to try any and every remedy that has been put forward as a cure for the dyspnoea of asthma. The line of treatment advocated by Dr. Berkart is aimed at prevention rather than cure, with the main object of reducing the liability to catarrh. Incidentally he makes mention of a few cases which have apparently obtained benefit by the use of the antitoxin of diphtheria and by other special methods. Perusal of the work, together with that of others, suggests very forcibly the lesson that asthma may arise from several causes, and that the determination of the cause in each case should determine the best line of treatment.

THE CORRESPONDENCE OF A NEUROLOGIST.

ON the plea that "the ordinary individual takes an intense interest in all that concerns his health," Dr. JOSEPH COLLINS has subjected to a certain amount of pruning and deletion certain letters received from patients and others, together with his own replies and comments, and has published them under the title of *The Way with the Nerves*.[2] They appeared originally in the *Medical Record* of New York, and the favourable reception accorded them led to the suggestion that they might appeal to a wider public. The question at once arises whether the book does not suffer to some extent from this ambiguity of aim. To answer this question it would be necessary to compare its contents in their present modified form with that in which they first saw the light. But inasmuch as the end in view by the author, as the title itself indicates, was rather the inculcation of a generally correct attitude and method of dealing with a certain class of maladies than a detailed technical handbook—rather the promotion of wisdom than mere knowledge—his decision may be justified. In any case, there is no doubt that he has produced a most readable volume. Several of the letters addressed to its author by patients or their friends constitute human documents of remarkable interest. The troubles for which relief or advice tending thereto is sought range from neurasthenia to "dual personality," ennui, and jealousy. One of the most amusing chapters in the book is that in which a lady recounts her observations anent the New World "bedside manner." She describes herself as "a neurotic of vast experience," and is of opinion that "any physician who crosses his legs and waves one toe up and down ought to be boiled in oil." The author advocates the restriction of the term "neurasthenia" to cases in which the morbid condition is mainly acquired, and that of "psychasthenia" to those in which it is mainly inherited, citing Charcot's differentiation of con-

[1] *On Bronchial Asthma: its Pathology and Treatment.* By J. B. Berkart, M.D., late Physician to the City of London Hospital for Diseases of the Chest, Victoria Park, etc. Revised and abridged third edition. London: Henry Frowde, Oxford University Press. 1911. (Demy 8vo, pp. 156; 12 figures. 5s. net.)

[2] *The Way with the Nerves: Letters to a Neurologist on Various Modern Nervous Ailments, Real and Fancied, with Replies thereto telling of their Nature and Treatment.* By Joseph Collins, Physician to the Neurological Institute of New York. New York and London: G. P. Putnam's Sons. 1911. (Post 8vo, pp. 319. 6s.)

genital or idiopathic and acquired neurasthenia in defence of his plea. He justly rebukes the tendency to regard the climacteric as in itself an adequate exciting cause of disease of any kind. And, in reply to a general practitioner who complains that all those of his patients who have got into the hands of quacks have gone there via the neurologist, he stoutly defends the latter from the charge of an inclination to therapeutic nihilism, attributing the too frequent failures rather to the slackness of general practitioners in giving effect to those seemingly trivial directions of the specialist upon which success mainly depends.

SURGERY.

THE place that was held in the affections of students and practitioners of last generation by "Erichsen" may quite reasonably be said to be that occupied by "Rose and Carless" in the present day. This *Manual of Surgery*[3] has reached its eighth edition; it has been translated into Czech and into Chinese, and has been published in America. There can be only one reason for its continued popularity, and that is that it is full, complete, compact, and a work in one volume. The death of Professor William Rose is referred to in the preface by his colleague, Professor CARLESS, but the absence of his name from the title-page makes no essential difference in the work, as his share in the preparation of later editions had been small. In the new edition numerous chapters have been rewritten; for instance, those dealing with diseases of the gall bladder and with malignant disease of the rectum; while the addition of typical blood counts and results of test meals go still further to increase the value of the work. Besides these features, newer advances in theory of disease: Wright's opsonin theory, the Wassermann reaction, the side-chain theory of Ehrlich, as well as quite new forms of treatment, such as the re-establishment of the lymphatic flow by silk strands suggested by Sampson Handley, are duly noted. The chapter on immunity is lucid and comprehensible. Prominence has always been given in this manual to surgical pathology, and we believe rightly. The tendency of the present-day textbook of surgery is to exaggerate the importance of the place of treatment at the expense of pathology, with the result that diagnosis has become the weakest link in the surgical chain. In "Rose and Carless" we have a well-balanced, thorough, steady, reliable book, which is full enough for the man reading for a fellowship, contains all in surgery that a general practitioner may desire to have, and yet is not by any means too large for a student's textbook. There is a very full index, and the illustrations and diagrams are apt and not too numerous. The publishers deserve praise for the convenient size of the volume, for its strong binding, and for this, too, that the leaves lie flat out whenever and wherever the book is opened.

We are glad to bring to the notice of the profession the publication in book form of Mr. W. H. BATTLE'S *Clinical Lectures on the Acute Abdomen*.[4] It may be that such expressions as "acute abdomen" and "peritonism," now commonly used, are pollutions of the well of English undefiled, but they serve their purpose in denoting quite clear and distinct clinical conditions, though we hope that their use will not become permanent. In the meanwhile no practitioner is entitled to content himself with a diagnosis to be labelled "acute abdomen" or "peritonism," for the former is a term which embraces an immense variety of pathological states, and the latter indicates a very late stage in a pathological process, though too often its development is rapid when measured by ordinary standards of time. In these lectures Mr. Battle puts clearly and succinctly the various abdominal catastrophes that are met with, and on broad lines indicates the treatment, The method of clinical lecture is well suited for such a subject, as it is best taught by narration of cases and not by systematic statement. Not that there is want of system in this volume, for the subject is dealt with in a manner which appeals to us as truly systematic. The author begins with the appendix as the commonest seat of origin of diseases culminating in the acute abdomen, and works down the list to causes and seats of origin less and less common. In the after-treatment of acute abdominal conditions success very largely depends on the efficient maintenance of the Fowler position and on saline injections by the rectum. The importance of these two recent adjuncts to the treatment, which we owe to American surgery, is perhaps not yet sufficiently appreciated. It may be said to be a sound general principle that the patient should be put into the half-sitting position as soon as the "acute abdomen" manifests itself, and that in that position he should be moved to the hospital or nursing home or kept at home till operated on. Continuous proctoclysis is not usually a success at home, but four-hourly saline injections are quite practicable, and in the opinion of some surgeons serve the purpose equally well. Two of the lectures deal in a conversational way with "some of the more rare causes of the acute abdomen" and "some neuroses which may cause symptoms of urgency." These are short and necessarily rather scrappy, but they are interesting from the fact that the author gives the clinical history of cases of each of the various conditions mentioned. This little volume will very amply repay perusal, particularly by young surgeons and family practitioners, who will find a large amount of helpful information about very common but often desperate cases which make large demands not only on their professional skill but also on their strength of character and firmness of will.

Dr. KRECKE'S[5] contributions to practical surgery consists in a critical examination of 1,925 operations of all sorts performed in his private practice during the three years preceding 1910. His main object seems to be to show that modern aseptic surgery may be successfully practised in private as well as in hospitals with special equipments, if only the surgeon exercises a little forethought. His description of his personal practice is full of useful hints. He lays special stress on the care of the hands, and urges the importance of this matter, not only for the consulting surgeon, but still more for the general practitioner and country surgeon, who, he says, may have to open abscess in the morning, attend a confinement, clear out a septic uterus, and then in the evening operate on a case of strangulated hernia. The practitioner should avoid touching any septic surface with his fingers, should wear gloves as a routine practice in all cases where he may have to encounter pus, but, above all, should cultivate a special sense of aversion to septic contamination, in consequence of which he feels uncomfortable if he inadvertently touches anything septic, and does not get rid of this feeling till he has carefully sterilized his hands. The hands should be washed thoroughly immediately after any contact with septic matter. In elderly patients pneumonia is the great danger to be dreaded, especially after abdominal operations. Among the measures advocated to guard against this are breathing exercises, which the patient learns to perform before the operation and carries on after so as to reduce the liability to hypostatic congestion. Patients are got out of bed into an armchair the day after the operation, if possible. Elderly patients, he says, are generally glad to get up in the first day or two after an operation; young people seem to feel an operation more and are less willing to get up, but it is of less importance that they should do so. In any case, there is no reason why even a young patient should be kept strictly in bed for more than a week after any ordinary abdominal operation. The report on local and general anaesthetics contains an account of his experiences of 89 cases of spinal anaesthesia. Only 37 of these were entirely free from trouble of some sort, and there was one death on the operating table. The rest of the book is concerned with statistics, methods of operative technique adopted in special cases, and a discussion of results obtained. Though much of the book is necessarily occupied with matters of ordinary surgical routine, it is well worth perusal for the sake of the careful descriptions given of special measures taken to meet special difficulties, and because the results of any exceptional or unusual measure are carefully criticized.

[3] *Rose and Carless's Manual of Surgery*. Eighth edition. Revised by Albert Carless, M.B., M.S.Lond., F.R.C.S., Professor of Surgery in and Surgeon to King's College Hospital, etc. London: Baillière, Tindall, and Cox. 1911. (Demy 8vo, pp. xii + 1406, with 12 coloured plates and many new and original illustrations. 21s. net. University Series.)

[4] *Clinical Lectures on the Acute Abdomen*. By Wm. Henry Battle, F.R.C.S., Surgeon to St. Thomas's Hospital; Hunterian Professor of Surgery at the Royal College of Surgeons of England. London: Constable and Co., Ltd. 1911. (Med. 8vo, pp. 107, Price 4s. net.)

[5] *Beiträge zur praktischen Chirurgie*. Munchen. 1910. (Pp. 532; 50 illustrations. M.7.)

MUSSER AND KELLY'S "HANDBOOK" OF TREATMENT.

IN our notice of the first volume of the great American *Handbook of Practical Treatment* (BRITISH MEDICAL JOURNAL, July 29th, 1911) the general scope of the work was indicated, and in the second volume[6] we recognize the same strain of thoroughness, and the same determination to record the most recent observations in the most readable form.

The volume contains many contributions from American writers and a few from this side of the Atlantic. Notable amongst these is a breezy article by Sir T. Clifford Allbutt on the treatment of diseases of the cardio-vascular system, which combines in characteristic fashion the completeness of the textbook with the practical wisdom of the experienced physician. The modern tendency towards the rigid application of the tenets of the clinical pathologist needs to be blended with the therapeutic enthusiasm of the specialist, and this is especially the case in dealing with heart disease. The vast increase in the knowledge of cardiac pathology has afforded the clinician better means of interpreting clinical symptoms, but in cases of chronic disease the treatment must still be merely palliative. Relief, however, is what the patient seeks, and, as Professor Allbutt rightly points out, that relief can only be given by close attention to a host of details which it is the doctor's business to see carried out. The term "heart failure" has figured largely in obituary notices of late years, and the treatment of heart strain, real or imaginary, has become fashionable. Arterial degeneration, on the other hand, receives little attention, and the comments upon these matters contained in this article deserve serious attention, and point the way to rational treatment. The surgical aspect of cardiac lesions is dealt with by Mr. Clinton Dent in a short chapter, in which he indicates his favourable opinion of operation for the release of adhesions as a scientific procedure, although as yet it has not been attended by strikingly favourable results.

The subject of infectious diseases occupies a large portion of the bulky volume. It opens with an article by Dr. Rufus Cole on the therapeutic measures called for in dealing with typhoid fever. Prophylactic injections were used largely during the Spanish-American War, and the results fully justified the method. The experience gained in many lands as to the persistence of the bacillus in the body after the subsidence of all evidence of activity, rightly leads the author to insist on the closest attention to disinfection of excreta of every kind. The old views as to restriction of diet have undergone many modifications, and plenty of cases are in evidence to prove that a mixed diet is often as successful as one limited to milk or other nutrient fluids. Dr. Cole himself evidently inclines to the time-honoured method, but advocates free use of water both internally and externally. The use of the bath for reduction of temperature has been greatly facilitated by the introduction of simpler means of moving the patient, and these are fully described and illustrated. Incidentally it is made manifest that perforation cannot be shown statistically to be directly associated with any form of dietary or antipyretic treatment.

Advocates of active measures in dealing with pneumonia may be somewhat disappointed with Dr. Hare's expectant attitude. The supporters of tracheotomy or intubation respectively will find the relative advantages of both methods fully discussed and illustrated by Dr. J. H. Jopson in his article on diphtheria. The fatal complications of measles, in the form of gangrenous stomatitis and vulvitis, appear to have been more evident of late years, and some useful cautions are given as to the best means of avoiding them.

Tuberculosis, described by Dr. E. O. Otis as a "communicable" rather than as an infectious disease, is very fully considered from the therapeutic and prophylactic points of view. The whole article is quite up to date, and contains reference to the latest work on the subject. The leading features of American sanatoriums are well illustrated, and the writer's remarks upon the relative values of systems of treatment as opposed to common sense are very much to the point.

Drs. White and Wood, who contribute the article on the treatment of syphilis, lay great stress upon the precautions necessary to prevent the spread of infection by general contagion apart from genital contact. From his description of gonococcic infections, Dr. E. Martin does not appear to have had much favourable experience of inoculation in chronic joint affections. Cerebro-spinal fever is discussed by Dr. L. F. Barker, who has found that Flexner's serum is in his hands the most effective antidote. Rheumatism figures among the infectious diseases, and is defined as being due to the *Diplococcus rheumaticus* of Poynton and Payne. Whooping-cough also appears in this category, as being caused by an unidentified microbe of the nature of the *Bacillus influenzae*. Tropical diseases receive full attention, and two useful chapters are added on the ocular and aural complications of infectious diseases.

It will thus be seen that the second volume is a worthy companion to its forerunner, and a most interesting work of reference from which to cull the latest information on the treatment of the group of diseases with which it deals.

[6] *A Handbook of Practical Treatment.* By Many Writers. Edited by John H. Musser, M.D., LL.D., and A. O. J. Kelly, A.M., M.D., of Philadelphia. Volume II: Diseases of the Circulatory System, Infectious Diseases, Tropical Diseases, Animal Parasites. 1911. London: W. B. Saunders Company. (Sup. roy 8vo, pp. 865; per set. 75s. net.)

BACILLARY DYSENTERY.

DR. HERMANN LÜDKE is eminently practical. In writing his book on bacillary dysentery,[7] he settles down on the first page to the business in hand, and from the beginning of the work to the end he does not waste a word. There is no rhetoric, no scientific disquisition of the quasi-philosophical type—merely a concise exposition of facts about the bacteriology of the disease, its clinical features, treatment, and diagnosis. For the isolation of the bacillus he recommends Drigalski-Conradi plates from which the crystal violet has been omitted. This last ingredient has some retarding effect upon growth, but when it is left out colonies of from 1½ to 2 mm. in diameter will develop in about twenty hours. It must be admitted, as the author says, that bacillary dysentery cannot be regarded as a single etiological entity, as there are undoubted biological differences between the Shiga-Kruse and the Flexner types; and, moreover, the peculiarities of the "Y" bacillus of Hiss and Russel and the strain isolated by Strong cannot be overlooked. American research on the association of dysentery bacilli with the "summer diarrhoea" of children also raises difficult problems of etiology, since the bacillus cannot be found in some cases which on clinical grounds are identical with those where it is present, and, presumably, the cause of the disease. In this country the presence of dysentery bacilli in the stools of children suffering from epidemic diarrhoea appears to be very much rarer than in America. Chapter VI is on serum-therapy, and contains an excellent collection of statistical data, including the author's own experiences, showing the favourable influence of the specific serum on cases in which the infective bacillus is of the Shiga-Kruse type. Chapters IX and X treat respectively of agglutination with serum from various species of animals, normal and immune, and agglutination with the serum of dysentery patients. The statistics they contain, particularly those provided from the author's own researches, are a valuable contribution to the study of agglutinins, and form a record which will be of permanent service to future workers on this subject. We congratulate Dr. Lüdke on the production of an excellent treatise, and only wish that there were more pathologists, both in his country and in our own, who were content to let facts speak for themselves without obtrusion of the personal equation.

[7] *Die Bazillenruhr.* Von Dr. Hermann Lüdke. Jena: Gustav Fischer. 1911. (Sup. roy. 8vo, pp. 239. Figs. 4, Tab. 1. M. 7.)

LEGAL POSITION OF ANTENUPTIAL VENEREAL DISEASE.

IN the lecture to the Berlin Dermatological Society, which he has reprinted in a pamphlet,[8] Professor HELLER discusses the question, Do German judicial decisions make it the duty of nupturients to declare former venereal disease? The lecture is valuable, and is very carefully documented. Twenty-two separate decisions are quoted and summaries are given of the legal position in other countries of the

[8] *Besteht nach der deutschen Rechtsprechung zwischen Heiratskandidaten (Nupturienten) eine Pflicht zur Offenbarung Überstandener Geschlechtskrankheiten?* Von Professor Dr. Julius Heller. Berlin: August Hirschwald. 1911. (Med. 8vo, pp. 32. M. 1.)

issues raised. The exposure of one party in a marriage to a loathsome or dangerous disease is a ground for a declaration of nullity, unless the full risk assumed was known and accepted. A medical certificate of complete recovery will not remove this, though it may protect from a claim for damages or aliment. If the risk is not fully realized until after marriage, nullity may still be declared. In view of the difficulty of giving an explanation sufficiently full and detailed to any woman not medically trained, Heller thinks the protection to be got by confession, as a rule, illusory, and as such a confession would in many cases lead to breach of engagement, he urges that it is inadvisable. It is individually inadvisable, even if the marriage is completed, because the husband has furnished a cause of domestic strife always to his disadvantage. It would constitute, he thinks, a national danger in Germany, in view of the rapidly declining birth-rate. Heller makes the appalling statement, which we have seen elsewhere, that in the large towns of Germany 80 per cent. of young men over 27 have suffered from gonorrhoea, and that in some classes (students, merchants, and officers) the rate rises to over 95 per cent. In English law, exposure of the wife to undeclared venereal disease may, as "cruelty," be urged as a cause of divorce,

NOTES ON BOOKS.

DR. W. C. BOSANQUET has written a small monograph on *Spirochaetes*[1] which affords a short but lucid account of present ideas in regard to these organisms. Although hardly to be regarded as an authoritative pronouncement on the subject, it yet displays a commendable judgement on the part of the author in dealing with a voluminous mass of scattered and not infrequently discordant observations. In most cases no attempt has been made to reconcile conflicting opinions, the author contenting himself with a plain exposition of the views on either side. Most questions, indeed, relating to spirochaetes bristle with difficulties, and the success with which Dr. Bosanquet has tackled them within such a small compass is to be highly praised. The first section of the book is general in character, dealing with the morphology, development, pathogenicity, and classification of the group as a whole; while the second section is devoted to short, systematic accounts of all the known species, pathogenic and otherwise, and there is added a carefully compiled bibliography comprising upwards of 600 entries. On the question of the biological relations of the spirochaetes Dr. Bosanquet maintains a non-committal attitude, although he certainly shows an inclination to admit the bacterial affinities of the smaller spirochaetes. He also views with doubt the existence of the so-called undulating membrane. In connexion with the mode of development of these organisms, he adds some interesting observations on *Sp. anodontae* which seem to suggest that this species may multiply by breaking up into a number of coccoid bodies. In dealing with the individual species the author has given exact measurements of the various forms, and has described their morphological characters in a brief but satisfactory manner.

There are many persons who think that a knowledge of a language can be acquired more easily by a special method than by learning it in the orthodox manner, and we assume that this belief is responsible for the multiplicity and variety of "systems" of learning foreign languages. A somewhat novel method of mastering the German tongue has been suggested by Mr. B. LEWIS. The idea which pervades his *Medical Vade Mecum*[2] is that by giving clinical lectures and other material in both English and German the reader will become well acquainted with the vocabulary of each. A dictionary is held to be superfluous, and the student is to learn his German or English vocabulary from reading clinical lectures in a known as well as in an unknown tongue. The book cannot even be regarded as a useful "crib," since the articles translated, although interesting and good from a scientific point of view, are not of much literary merit. The German appears to be the original, but we are informed in an introduction that the text was prepared specially to admit of literal translation, and is therefore indifferent German—and the English is no better.

When a writer essays to instruct the public on well-worn topics it is essential that he have something original to say, or that he can write in a manner which compels attention. Dr. BERNARD MYERS has attempted such a task in *The Letters of a Professional Man*,[3] and, excellent as is the scope of the little book, it must be confessed that whilst the opinions expressed are unexceptionable, they are not novel, and too often the manner of their expression is neither concise nor convincing.

For an elementary book suitable for young people *Talks on Health and Temperance*[4] is marked by moderation and good sense. The sections on elementary physiology and food are lucid and practical, those on alcohol and intemperance well-balanced and fair, and the concluding section on the care of the body helpful and intelligent. There are many explanatory plates and diagrams, and both the scheme of the book and the manner in which it is carried out are excellent.

Under the somewhat misleading title of *Science and the Criminal*[5] Mr. C. AINSWORTH MITCHELL, known to the magazine reading public as the author of numerous articles on various branches of science, has written a readable and, in parts, interesting description of some of the ways in which scientific methods have been applied by the malefactor in his conflict with society on the one hand and on the other by society to bring the criminal to book. We say "misleading" because to scientific men the title of the work would, we imagine, suggest rather an *exposé* of the results of scientific inquiry into the criminal in his ethnological, sociological, anthropometrical, and psychological aspects; whereas this book is concerned entirely with matters appertaining to evidence at trials and the detection of criminals, such as finger-prints, handwriting, invisible inks, forged documents, blood tests, the effects and detection of poisonings, etc. To the lay public, always interested in such matters as these, this book will doubtless appeal successfully, and in justice to the author it must be admitted that when scientific facts are discussed they are described with precision and absence of bias and after a careful scrutiny of all related facts.

The publications of the medical department of the Royal Prussian Ministry of War, dealing with matters connected with the health of the army, are neat little booklets containing useful information. The volumes before us are Nos. 47 and 48.[6] No. 47 gives an excellent general and special description of the "Königliche Hauptsanitätsdepot in Berlin," the head quarters of the Army Medical Corps. No. 48 contains an article by Professor Krause and Dr. Landgraf on beta-naphthalinsulphonic acid and acid sulpho-salicylate of sodium as a reagent for albumen in urine for use by medical officers in the field. Attached to this article are reports by chemists. It appears that while the reagent has advantages for field service, it is not a pure indicator for albumen. The conclusion is that, provided the sources of error are recognized, the test can be recommended. These publications will be found valuable by military surgeons.

Mr. J. F. WESTON'S *Elementary Experimental Chemistry*[7] is intended as a guide for beginners. Commencing with the simplest experiments, such as the preparation of solutions and the investigation of their nature, the student is led by orderly steps to simple quantitative operations. The directions are adequate and clear, but not so copious as to leave nothing to be supplied by the exercise of the student's own faculties. The author is at the head of the chemical department of one of the large London polytechnics, and the book is admirably suited for teaching the rudiments of the subject, in a scientific and not a mechanical manner, to students attending classes such as are provided in these institutions.

[1] *Spirochaetes: A Review of Recent Work, with Some Original Observations.* By W. Cecil Bosanquet, M.A., M.D., F.R.C.P. Philadelphia: W. B. Saunders Company. 1911. (Pp. 152; 89 figures. 12s. net.)

[2] *Medical Vade Mecum in German and English.* By B. Lewis. Vienna: B. Lewis. 1910. (Demy 8vo, pp. 559. Price not stated.)

[3] *The Letters of a Professional Man.* By Bernard Myers. London: Hirschfeld Brothers, Limited. Glasgow: Alexander Stenhouse. 1912. (Crown 8vo, pp. 77.)

[4] *Talks on Health and Temperance.* London and Edinburgh: McDougall's Educational Company, Limited. 1912. (Cr. 8vo, limp cloth, pp. 109; 26 illustrations. 7d. net.)

[5] *Science and the Criminal.* By C. A. Mitchell, B.A., F.J.C. London: Sir Isaac Pitman and Sons. 1911. (Post 8vo, pp. 237; 29 illustrations. Price 6s. net.)

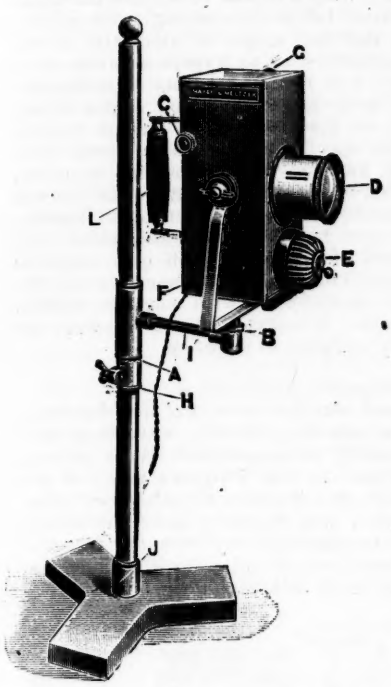
[6] Veröffentlichungen aus dem Gebiet des Militär-Sanitätswesens. Issued by the Medical Department of the "Königlich-Preussische Kriegsministerium." Vol. 47, *Das Königliche Hauptsanitätsdepot in Berlin.* Berlin: Aug. Hirschwald. 1911. (Sup. roy. 8vo, pp. 38, 3 plates, 24 illustrations. 2s.) Vol. 48, *Ueber ein Eiweissreagens zur Harnprüfung für das Untersuchungsbesteck der Sanitätsoffiziere.* (Sup. roy. Price 1s. 6d.)

[7] *Elementary Experimental Chemistry.* By F. E. Weston, B.Sc.Lond., F.C.S. London: Longmans, Green and Co. 1911. (Crown 8vo, pp. 146; 78 illustrations. 2s.)

MEDICAL AND SURGICAL APPLIANCES.

A Lamp for Aural Surgery.

MR. CHARLES HEATH, F.R.C.S., has found that the lamps which the instrument makers have hitherto supplied for the use of the aural surgeon have certain disadvantages. Some become extremely hot when in use, and cannot safely be handled. Others, under slight vibration, have a provoking habit of shifting from the position in which they have been placed by the surgeon; the direction of the cone of light is thus altered, and may no longer be suitable. In designing the lamp here illustrated, these and many other matters have received attention, and Mr. Heath states that prolonged use has not shown that any essential has been omitted. The matter of easy cleaning has been considered, and though made of brass, the lantern is covered with aluminium paint and varnished, so that it can be cleaned in a moment with a damp cloth. The lamp can be used for operations on the ear, throat and, nose. It has been made by Messrs. Mayer and Meltzer.



A, Ratchet to ensure that the arm (I) shall remain in whatever position it is placed. B, Ratchet to ensure that the lamp, when turned in the right direction, shall remain there. C, Milled head for raising or lowering the burner, in order to bring it opposite the lens (the burners vary in size). D, Telescopic tube carrying the lens; this slides easily, and focuses the light. E, Tumbler switch. F, Cradle carrying the lantern; on the opposite side this is extended to the top (G) in the form of a cleat, for winding up the flexible wire in a figure of 8 manner, thus preventing kinks. G, Top of cleat, just visible. H. Movable clamp, to be fixed with the thumbscrew at the required height. I, Arm carrying the lantern and working on the ratchet at A. J, Table stand; a taller one is made with a larger base to stand on the floor. L, Handle for carrying the lamp when it is used as a hand lamp. As the lantern never gets hot it can safely be used in this way. Nernst or ordinary burners can be used; the lens in the illustration is adapted to the Nernst.

A Covered Dredger.

THE Newman Publishing, Printing, and Manufacturing Company, 105, Midland Road, St. Pancras, N.W., have sent up specimens of an ingenious dredger for salt, pepper, or pounded sugar. It is a glass stoppered bottle with a metal cap. The mouth is closed by a loose, wedge-shaped stopper base inwards, with a wide flange internally. When the bottle is upright the stopper fits securely on to the neck; when it is tilted and shaken the contents fall out in a thin stream. It must have seemed to many readers that the habit of putting salt in open cellars and sifted sugar in open basins is not very cleanly, and though the common perforated cap does something to remedy this objection it does not do so perfectly; this dredger seems to obviate the objection completely.

AT the meeting of the International Congress of Dermatology recently held in Rome it was decided that a permanent international dermatological society should be founded.

THE COMPOSITION OF CERTAIN SECRET REMEDIES.*

THE "NORMYL" CURE FOR ALCOHOL AND DRUG ADDICTIONS.

WE have been favoured by a correspondent with a certain quantity of the medicines used in the "'Normyl' Treatment" of alcoholism; these were supplied to a patient who did not continue the "cure." It appears from the printed matter on the package that the full course consists of twenty-four days' medicine, supplied in twenty-four bottles; the package sent by our correspondent was marked "second treatment"; it had contained twelve bottles, but one had been removed before it reached us, and the eleven sent were marked respectively "14th day," "15th day," etc., to "24th day." Each bottle had the cork and neck covered with tinfoil, over which was the label indicating the day on which the contents were to be taken, showing that they had not been opened or tampered with. On the outside of the box was a proprietary medicine stamp for 3s., this being the duty payable on proprietary medicines of selling price 20s. to 30s. (exclusive of stamp); an article bearing a 3s. stamp is usually sold at 33s.

Each bottle contained about 150 minims of a light reddish-brown liquid. The directions for use are:

Secure from your chemist what is known as a flat eight ounce bottle for pocket use and a dose glass. Mix the contents of vial marked "1st day" in eight ounces of water and take half-an-ounce (one tablespoonful) of the mixture every hour while awake. When any of the mixture remains from the previous day, throw it away, as it loses its virtue after 24 hours. Mix a fresh bottle every day. Keep the bowels regular, and in case of constipation take some gentle aperient as often as may be necessary, and use no intoxicating liquor. Eat of any food you like.

It is further stated that:

As this preparation contains a small medicinal dose of Nux Vomica, it must, in order to comply with the Pharmacy Act, be labelled poison, but its composition remains unaltered.

And:

N.B.—Although a cure will apparently be effected in a few days, it is absolutely necessary in order to ensure a Permanent Cure that a full course of 24 days' medicine (24 bottles) shall be taken without a break, so that the alcoholic or drug poison may be thoroughly eliminated from the system and thus prevent a return of the crave.

Qualitative examination of the contents of some of the bottles did not indicate any differences of composition, and as the quantity in one bottle was far too small for quantitative analysis, the contents of several were mixed for analysis. The mixed liquid was found to contain—

Alcohol	75.5	per cent. by volume.
Alkaloid	0.09	per cent. (weight in volume).
A soft resin ...	1.5	,, ,, ,,
A non-alkaloidal bitter principle ...	A fair trace.	
Ash	0.1	per cent. (weight in volume).
Extractive, including colouring matter ...	2.3	,, ,, ,,

The alkaloid consisted principally of strychnine, with a little brucine; the amount present corresponds to about 25 per cent. (by volume) of tincture of nux vomica, or 38 minims in one bottle (one day's medicine). The resin did not agree in character with jalap or scammony resin, and the quantity available was too small for its identification. The non-alkaloidal bitter principle was extracted from acid solution by chloroform, like the principles of several common bitter drugs. It agreed in its behaviour with various colour tests with picrotoxin, and a small quantity of the latter was accordingly prepared in an impure state from a tincture of *Cocculus indicus*, for special comparison with it; they agreed very closely, though not perfectly, in their behaviour with various tests—perfect agreement between necessarily impure substances was not to be expected—and there appears a high probability that the substance extracted from the "Normyl"

* Previous articles of this series were published in the following issues of the BRITISH MEDICAL JOURNAL: 1904, vol. ii, p. 1585; 1906, vol. ii, pp. 27, 1645; 1907, vol. i, p. 213; vol. ii, pp. 24, 160, 209, 393, 530, 1653; 1908, vol. i, pp. 833, 942, 1373; vol. ii, pp. 86, 505, 1022, 1110, 1193, 1285, 1566, 1697, 1875; 1909, vol. i, pp. 31, 909, 1128; vol. ii, p. 1419; 1910, vol. i, pp. 151, 213, 393, 1005, 1063, 1120; vol. ii, pp. 982, 1350, 1928; 1911, vol. i, pp. 26, 91, 823, 1324; vol. ii, pp. 32, 77, 456, 767, 854, 1543; 1912, vol. i, p. 26, 141, 318, 438, 683, 791, 846.

medicine was picrotoxin, though it was impossible to prove its identity conclusively with the minute quantity available. The ash extractive and colouring matter did not give any evidence as to the drug from which they were derived; there was an aromatic flavour in the mixture resembling that of orange.

THE INTERNATIONAL TUBERCULOSIS CONGRESS AT ROME.

[From our Special Correspondent.]

(Continued from page 906.)

On Saturday evening, April 13th, an informal *conversazione* was held at the Castle of St. Angelo, and on Sunday morning the Congress was formally inaugurated in the presence of the King and Queen of Italy at the Campidoglio. Professor Baccelli, the veteran President of the Congress, whose voice resounded clear in spite of his eighty summers, welcomed the audience in an admirable address, and his oration was followed by speeches from a number of national delegates.

The British Government was represented by Dr. Leslie Mackenzie, of the Local Government Board of Scotland, whose address was an admirable example of what should be said on such occasions, and how it should be said. Dr. Leslie Mackenzie said:

> Your Majesties,—I have the honour to represent the United Kingdom of Great Britain. In the name of His Britannic Majesty's Government, I wish to convey to your Majesties the satisfaction of our people that your Majesties have graced this Congress with their presence.
>
> For centuries we in England have been fascinated by the great history of your Majesties' country, and educated in its literature. Your Majesties to-day make it possible for the men of science and the men of affairs now engaged in every country of the world in the campaign against tuberculosis to share in that great history and so to continue with new courage the struggle towards a healthy life. In the historic centre of Western civilization, the United Kingdom of Great Britain offers salutation and thanks to the King and Queen of United Italy.

The arrangements for the convenience of members at this meeting were extremely imperfect, and not a few failed to obtain admission, and those who did suffered discomfort owing to the deficiency of seats.

GENERAL ADDRESSES.

On the same afternoon Professor Landouzy of Paris delivered his lecture on social factors in the causation of tuberculosis. He gave an exhaustive review of the existing conditions in every phase of life, and suggested that evil conditions of environment might best be corrected by a spread of education. He was followed by Dr. Citron (Berlin), who read the address of Professor Kraus of Berlin, who was unable to be present, on early diagnosis of pulmonary tuberculosis. Professor Kraus regarded the aërogenous as the most frequent source of infection, and reviewed the various physical signs which may be present. On the afternoon of April 14th Dr. Maragliano gave an address on the preventive vaccination of man against tuberculosis, and was followed by Dr. Webb of Colorado, who dealt with the same subject. The latter had only twenty minutes in which to deliver one of the most suggestive papers of the Congress, and the authorities had failed to arrange for showing his lantern slides.

Immunity by Inoculation of Living Bacilli.

Dr. Webb has shown that large numbers of virulent tubercle bacilli may be inoculated into guinea-pigs without producing tuberculosis, provided that very few bacilli are at first inoculated, and that the numbers are gradually increased. Lieb has also shown that rabbits can be treated with tubercle bacilli of a virulent bovine strain in a similar manner. Dr. Webb reported the results of a research which indicate that monkeys, which in captivity are very vulnerable to tuberculosis, can be safely given increasing amounts of virulent tubercle bacilli if inoculated in a similar manner as the above animals. Twelve monkeys tested to tuberculin by Römer's method gave negative reactions, and were therefore assumed not to be already infected with tuberculosis. They were then inoculated with a strain of human bacilli, virulent in a dose of thirty-five bacilli to the guinea-pig. The number of bacilli injected at each inoculation increased from 1 to 65,000. Two and a half months later the Römer test was again applied, and three monkeys gave a reaction to 20 mg. of old tuberculin. They were killed, but no trace of tuberculosis was found either microscopically or when portions of glands were macerated and inoculated into guinea-pigs. With 5 mg. of tuberculin the other monkeys gave the normal fall in the evening temperature, and it was suggested that this might be attributed to the presence of specific antibodies, or to hypersensitiveness to tuberculo-protein. To test for the presence of antibodies Dr. Webb used the meiostagmin reaction of Ascoli and Izar, which depends on the decrease in surface tension which occurs when the specific antibodies in serum unite with the appropriate antigen when incubated together. The surface tension can be accurately measured before and after incubation by means of the stalagmometer of Traube. To this test both normal monkeys and those which had received large numbers of tubercle bacilli gave negative results. Emery's method of measuring quantitatively the specific antibodies was also applied with negative results. Again, from differential leucocyte counts it was not possible to adduce any evidence of infection.

Therapeutic Application.

Of very great interest was the account of how two boys, aged 3 years and 3 months respectively, were inoculated with living bacilli. Before treatment both these patients gave a negative reaction to von Pirquet's test. A few weeks later their father died of advanced pulmonary tuberculosis, and their mother was found to have tuberculous infection of one lung, accompanied by irregular temperature. The children were then inoculated with a culture of human tubercle bacilli in the following doses:

Date.	No. of Bacilli.	Date.	No. of Bacilli.
Oct. 20th, 1910	1	Dec. 8th, 1910	35
Oct. 27th, 1910	3	Dec. 15th, 1910	50
Nov. 3rd, 1910	5	Dec. 22nd, 1910	75
Nov. 10th, 1910	8	Dec. 29th, 1910	100
Nov. 17th, 1910	12	Jan. 5th, 1911	125
Nov. 25th, 1910	18	Jan. 12th, 1911	150
Dec. 1st, 1910	25		

Total number of bacilli received by each child, 607.

The children were now again tested by means of the von Pirquet skin test and again the reaction was negative. It was realized that the intradermal test might have been more thorough, but as the results with this test in monkeys and, as Krause reports, with this test in guinea-pigs suggested that it would be possible to sensitize to tuberculo-protein, it was perhaps fortunate that it was not employed. The children gained weight and were thoroughly healthy to date. On May 22nd, 1911, after four months' freedom from inoculations, the children were again tested and found again to be negative to the von Pirquet reaction.

Conclusions.

1. The exact number of tubercle bacilli of the culture employed which will infect a rhesus monkey has not yet been ascertained.
2. A rhesus monkey, weighing 2,332 grams, withstood infection when injected at one dose with more than six times the dose of human tubercle bacilli which caused tuberculosis in a guinea-pig weighing 744 grams.
3. Two monkeys each received safely virulent human tubercle bacilli enough to kill at least 12,000 full-grown guinea-pigs.
4. No antibodies so far have been satisfactorily demonstrated in the serums of the vaccinated monkeys.
5. The temperature charts indicate the possible presence of such antibodies which might be interfering with the normal night drops following the subcutaneous inoculation of old tuberculin for diagnostic purposes.
6. It would appear that it is possible by the intradermal inoculation of old tuberculin to sensitize the skin of a monkey to tuberculo-protein.
7. Two children, both of whose parents were tuberculous, have been successfully vaccinated with upwards of 600 virulent human tubercle bacilli, without any indication of infection up to the present time.

Tuberculization and Detuberculization.

On Tuesday, April 16th, Dr. R. W. Philip delivered an address on tuberculization and detuberculization. Dr.

Philip spoke for some time in Italian, and his views have been endorsed by the leading papers in Rome.

WORK OF THE SECTIONS.

I.—SOCIAL DEFENCE AGAINST TUBERCULOSIS.

The confusion which marked the general arrangement of the Congress as a whole was also apparent in the work of the sections. In many cases papers were read in one section which obviously should have been delivered in another. Again, it was impossible to know when any given paper would be read, and some of the "*rapporteurs*" far exceeded their twenty minutes, so that other papers were put off from day to day. Thus, a paper by a town councillor of an English city was postponed from day to day, and was eventually read in the Medical Section. As this communication dealt with administrative measures, it should obviously have been read in the first section. The English-speaking representatives at the Congress were a small minority, so that whenever a communication in English was announced the section rapidly cleared.

Tuberculosis and School Children.

Miss N. LA MOTTE (Baltimore) described the work of women health visitors in most of the eastern cities of the United States, which is on the same lines as the work of our own health visitors. The work of women in London was described by Dr. MURRAY LESLIE. The incidence of tuberculosis in schools was the subject of many papers. Dr. HOMER FOLKS (New York) read a paper on the extent to which the education of children might bear on the prevention of tuberculosis. Dr. H. MERY (Paris) discussed the incidence of tuberculosis in children of school age, and stated that open-air schools were required for 4.25 per cent. of all school children. Professor BADALONI laid great stress on the conditions under which children are taught. By a series of excellent pneumographs he showed that a badly-constructed desk and seat exercised a most pernicious influence on the tidal breathing of the normal child. Dr. FLEURY (Paris) described the existing organizations for the treatment of tuberculosis in children in France. A similar paper dealing with the United States was contributed by Dr. EDWARD O. OTIS (Boston). Miss M'GAW (London) read a paper on the relation of the tuberculosis open-air school to the co-ordinated system for the control of tuberculosis. This paper aroused great interest, as for one thing it showed how the greatest potentiality of these schools was lost if they were not linked up and connected with the tuberculosis dispensary, the sanatorium, hospital for advanced cases, working colonies, and other factors in the scheme. Miss M'Gaw's paper was in Italian, and the Italians present signified their approval by making the author an honorary president of the section. M. REY (Paris) gave an interesting address on school construction; our ideas on the subject, he said, required complete revision if we were to ensure even the health of the normal child.

Notification of Tuberculosis.

Dr. E. W. HOPE (Liverpool) gave a communication on the notification of tuberculosis by voluntary or compulsory measures. Having outlined the history of the voluntary and compulsory notification in the United Kingdom, he summarized the object of limitation of notification of pulmonary tuberculosis as follows:

I. *Exact Knowledge as to Prevalence of Disease.*

This information must necessarily be largely influenced by the means at the disposal of the medical profession. Everybody knows the difficulty in incipient cases of coming to a conclusion, and the personal factor is an important element in such cases. Many incipient cases will have no tubercle bacilli in the sputum.

II. *Action by Public Health Authorities.*

This action covers practically the whole ground of municipal sanitation. The following points may be enumerated as indicating lines of advance—namely:

(*a*) Visitation of cases, education of patients, discovery of insanitary surroundings, occupation, etc. Inquiries as to whether patient is under medical care. The urging of medical treatment where necessary.
(*b*) Isolation—by day, by night.
(*c*) Disinfection of premises from time to time.
(*d*) The offering of assistance with regard to admission to sanatoriums of various kinds.
(*e*) Co-operation of Boards of Guardians or charitable bodies with regard to maintenance of family where the patient is a wage earner.
(*f*) After-care of patients discharged from sanatoriums.
(*g*) Co-operation with education authorities:
  (1) *Re* special school accommodation.
  (2) *Re* desirability of attendance at ordinary schools.
(*h*) Compulsory removal of cases to institutions—for example, St. Helens' New Act.
(*i*) The search for infected "contacts."

Limitation of Notification of Phthisis.

In the upper and middle classes practitioners may refrain for a time from notifying cases for various reasons, notwithstanding a compulsory system, perhaps from dread of the diagnosis being known by the patient's friends, fear of interference with employment, fear of visits from officials, but all of these groundless apprehensions will probably very quickly disappear.

There will always remain, however, a certain number, perhaps a very small number, of unrecognized cases whose infectivity may be considerable, and there will always be the risk of the dangerous, heedless, thriftless person, probably intemperate, and probably drifting from hospital to hospital or workhouse to workhouse, and being a source of danger as long as he is at large. For these persons compulsory notification should be accompanied by powers of compulsory detention.

Notification will not bring to light the existence of "unrecognized" cases whose infectivity may be considerable.

The value of notification is certainly diminished by the great divergence of medical opinion in the diagnosis of "phthisis" in a case with no bacilli in the sputum. This is especially the case with children.

Many notifications coming from hospitals, dispensaries, and practitioners, relating to poor persons residing in crowded neighbourhoods, bear wrong addresses, and the patients cannot be found.

Some measure should be adopted to secure the "cancellation" of a notification in respect of a satisfactorily "cured" patient.

Notification of other Forms of Tuberculosis.

This action is not called for under the Local Government Board Orders, but has been in vogue in Liverpool since the introduction of the voluntary system of notification was adopted in 1901.

The number of cases notified has not been large, and in any case the notification of this form of tuberculosis is of very minor consequence in comparison with the other.

Dr. Hope suggested that a very important extension of notification related to tuberculosis in milch cows. Since 1900, under Act of Parliament relating to Liverpool, every dairyman within the city who has in his dairy any cow affected with or suspected of having tuberculosis of the udder, is required to notify the fact to the medical officer of health. Dr. Hope also made the suggestion that notification of human tuberculosis should be limited to those cases of open or discharging pulmonary tuberculosis. This suggestion was widely canvassed at the Congress, and in general it was felt that the true purpose of notification—to enable the sanitary authority to have an accurate knowledge of the incidence of the disease in its area—would be retarded by this limitation.

Alcohol and Tuberculosis.

Professor SIMS WOODHEAD (Cambridge) read a paper on the relationship between alcohol and tuberculosis. The following summary contains the principal points of this communication:

Incidence of Tuberculosis in Trades Exposed to Temptation to Alcoholism.—Tatham and Newsholme have published statistics to the effect that persons engaged in the distribution of alcohol are especially prone to tuberculosis. Tatham gives the figures for eleven trades, barmen heading the list as having the greatest mortality from tuberculosis. With regard to tuberculosis amongst brewers' employees, Karl Pearson, in a pamphlet recently published, quotes the statistics of the Leipzig Ortskrankenkasse in support of his contention that alcoholics being stronger and more vigorous than the temperate are less affected by tuberculosis. Von Gruber, from the same statistics, draws an entirely different conclusion. These statistics certainly show that there is a very high tuberculosis incidence among brewers' employees between the ages 35 to 54, a fact which bears out Liebe's statement that tuberculosis frequently attacks drinkers later in life than others. Reveillaud states that 66.6 per cent. of the coffee-house waiters in Brussels die of tuberculosis. The age factor of tuberculosis in different trades seems to be of special importance in connexion with the age factor in alcoholism. This comes out with special force in von Gruber's figures.

Alcohol as a Predisposing Factor in Tuberculosis.—Letulle, from his observations in the Paris hospitals, concludes that of all chronic complaints slow alcoholic poisoning is the surest preparation for the invasion of pulmonary tuberculosis. Increased susceptibility to tuberculosis is frequently the result of the action of special poisons, often acting upon the nerves; and in many cases alcohol appears to act cumulatively along with

these other poisons. In so far as alcohol interferes with nutrition, most writers are of opinion that it is a predisposing factor in tuberculosis. Racial and class predisposition afford additional evidence as to the predisposing influence of alcohol both directly and indirectly. Osler, Hector Mackenzie, Vos and Strumpell may be referred to on these points.

Alcohol is Associated with Cirrhosis of the Liver, Nervous Disorders, etc., which Predispose to or Accompany Tuberculosis.—Evidence of this was cited from Vivian Poore, Allchin, Percy Kidd, Oliver, von Bunge, Vos, and Kelynack.

Parental Alcoholism Predisposes the Offspring to Tuberculosis.—J. H. Greef, from observations made on over 150 families, in which he examined 524 children personally, states that where the father or maternal grandfather was a drunkard the daughter was in 10 per cent. of the cases phthisical, and in 70 per cent. unable to suckle her children. Reynier states that in a large proportion of cases of external tuberculosis in children he can find no family history of tuberculosis, but the father is often a drunkard. He adds that 90 per cent. of his cases of external tuberculosis in adults over 40 are due to alcoholism.

Use of Alcohol in Sanatoriums.—In England, France, and America alcohol is being regarded with growing distrust; in Germany and Italy it is looked upon more favourably. There is evidence that it is unsatisfactory in the treatment of night sweats; the author's own experiments in temperature lead him to agree with this view. The *prognosis* in tuberculosis is less favourable in an alcoholic, because alcohol interferes with metabolism, and also with the patient's mind and will power, making him less capable of determined and persevering co-operation in his cure.

Result of Direct Inoculation Experiments with Tuberculous Material on Alcoholized Animals.—These experiments, carried out by Kern, Laitenen, and Achard and Gailard, are comparatively few in number, but they afford some corroboration to the idea that alcohol is a predisposing factor in tuberculosis. The evidence is, however, incomplete, and much requires to be done before the matter is settled from the experimental point of view.

Professor Woodhead concluded by saying that he was strongly in agreement with those who held that any efficient antituberculosis campaign must include educational anti-alcohol work.

Dr. H. TRIBOULET (Paris) also read a paper the general conclusions of which were in accord with those of Professor Woodhead.

Cinematograph Lecture.

A general conference of this section was held on Thursday, Professor GUALDI (Rome) in the chair, when Dr. HALLIDAY SUTHERLAND (London) delivered a lecture, illustrated by the cinematograph, on the Edinburgh system for the control and eradication of tuberculosis.

II.—PATHOLOGY AND THERAPEUTICS.

During the first days of the medical portion of the second section the question of immunity to tuberculosis was considered at great length by Professor COURMONT (Lyons), Dr. NEUMANN (Vienna), and Professor CALMETTE (Lille). The papers and discussion practically covered the whole field of immunity, but it did not appear that there was anything new to record. The specific treatment of tuberculosis was considered by Professor TEISSIER and Professor FERNAND ARLOING (Lyons). They concluded that tuberculino-therapy cannot be regarded as a cure, but that it is an indispensable adjuvant to treatment on hygienic and dietetic lines, as by this means a specific defensive reaction can be produced in the patient.

Artificial Pneumothorax.

A large number of papers, mostly in Italian, were read on this subject. In certain cases excellent results were recorded, but in general it seemed that the application of this treatment must of necessity remain very limited, since its applicability depends on special pathological and anatomical conditions.

Heliotherapy.

Dr. F. MORIN (Leysin) made a short but excellent communication on the treatment of tuberculosis of glands, joints, bones, and skin by exposure to sunlight. It was illustrated by lantern slides, and a large number of photographs. In most cases the treatment extended over months, even years, but there was no question that the improvement was great. A most striking photograph was that of a young patient with arrested disease of the tibia ski-ing stark naked over Alpine snow. In contrast to these photographs were those of a foreign institute, or perhaps one should say a firm, which shall be nameless. Here the effects of the light treatment were shown, but it was curious that while all photographs of the patient before treatment were printed on bright, glossy paper, whereby details were accentuated, the after-results were invariably printed on dull matt paper, no doubt for artistic effect.

Early Diagnosis in Childhood.

Early diagnosis in childhood was discussed by Dr. HUTINEL (Paris), Dr. F. KRAUS (Berlin), and Professor TESTI (Rome). The papers were exhaustive but not novel. Dr. SIDEROT (Paris) read a paper on predisposition to tuberculosis, in which a theory very French in its ingenuity was developed. According to Potain, dilatation of the stomach is accompanied by dilatation of the right heart. Therefore if an infant's stomach be dilated through improper alimentation, its right heart will be dilated. This will cause a spasm of the right pulmonary artery and congestion of the right pulmonary vein, so that there will be dullness at the right apex more often than at the left, and so predisposition can be diagnosed. It may be objected that in children dullness at the right apex is not more frequent than at the left, and that probably every rachitic child has a dilated stomach.

The Iodine Treatment.

An interesting paper was that of Dr. GEORGE L. BROWN (Montreal) on iodine in treatment. Iodine in one form or another has been largely used in the treatment of pulmonary tuberculosis. Dr. Brown attributed the uncertainty of its results to the presence of secondary infection, which he investigated as follows:

A culture was taken direct from the larynx by means of a sterilized laryngeal snare and wire. The wire was protruded and a culture taken, then the wire was withdrawn into the holder and the end of the snare sterilized, the wire was then protruded again into the bouillon. The most common organisms found were the staphylococcus, pneumococcus, colon bacillus, and the *Micrococcus tetragenus*. In the non-febrile case a culture from the sputa developed staphylococci and diplococci which sometimes occurred in groups of four. This organism was classed as a pneumococcus as it coagulated Hiss's serum water medium and was a high acid inulin fermenter and was Gram-positive. During an attack following a cold this would form chains, but would soon revert to its original form while fever would last for about three weeks.

In the febrile cases a culture from the sputa showed a chaining diplococcus of small size, forming, when virulent, very long chains. Its coagulating action on Hiss's serum water medium depended upon the amount of acid produced when it was fermenting inulin.

In a case without fever that had been treated for some time, in whom the cough and sputa had ceased and the lung had almost cleared up, a cold developed, accompanied by fever. The physical signs increased, and on examination of the sputa a few tubercle bacilli and long chaining diplococci were found. In this case iodine failed to cure the disease, and it progressed unfavourably, with cavity formation, pneumothorax, and death. Having satisfied himself that this chaining diplococcus was the cause of the failure of iodine to cure pulmonary phthisis, he decided to examine some febrile non-pulmonary cases. Dr. Forbes, of the Children's Memorial Hospital, kindly permitted him to examine the chronic tuberculous joints in the hospital. There were twelve joints examined, four without and eight with fever. In the latter a chaining diplococcus was invariably found. Three cases of renal tuberculosis were examined, two without and one with fever. In the urine of the former tubercle bacilli and colon bacilli were present, while in the latter the chaining diplococcus was found as well as the tubercle bacilli. This chaining diplococcus was examined still further as to its virulence. The plan worked out by Duval and Lewis was adopted—that is, the power of this organism to ferment inulin bouillon, also its power to coagulate Hiss's serum water medium. It was difficult to say whether this diplococcus should be classed as a pneumococcus or a streptococcus. After close observation, he concluded that it was a pneumococcus, and its virulence was to be estimated according to its power of fermenting inulin or its ability to retain chain formation in repeated cultures. He found that this organism taken from the same case differed in its power to ferment inulin at different periods. At the beginning of the case, when its virulence is marked, it may show a medium power of fermentation, but later, as the case progresses, its power to ferment inulin, as well as its chaining capacity, will be diminished. This diminution is especially noted after secondary and repeated cultures. According to Duval and Lewis, one would classify this organism as a pneumococcus of high, medium, or low inuline fermenting power. Their medium consisted of 1 c.cm. of a 1 per cent. inulin solution in 9 c.cm. of bouillon, and after inoculation was incubated for ten days and the acid estimated with ½ per cent. alcoholic solution of phenolphthalein. The high acid producers averaged 6.5 per cent., the medium 4.5 per cent., and the low 2.6 per cent., while the *Streptococcus pyogenes* gave only 1.65 per cent.

The very high acid producer was a large-sized diplococcus with capsule, which, when active, chained but was not virulent, as it soon lost its chaining capacity. It produced a bronchitis with fever which lasted about three weeks. The medium and

low acid producers caused marked and serious effects. This diplococcus was of small size with capsule, and produced a cloudy bouillon containing long chains. The colonies on blood agar varied according to the degree of acidity from the size of a very small to a large pin head, and only when very virulent produced small chains. The lung lesion produced corresponded to the degree of acidity. When caused by medium acid producer one usually found a severe bronchitis followed by death in about six weeks; but, when caused by a low acid producer, one found lung consolidation, cavity formation, and a course corresponding to the vast majority of chronic phthisis.

Miscellaneous Papers.

Papers on the use of Roentgen rays in diagnosis were read by Professor MARAGLIANO and Dr. MURRAY LESLIE (London). The latter urged that in certain cases their use was indispensable to the diagnosis of pulmonary tuberculosis. Dr. FLICK of Philadelphia sent a communication, in which he urged a universal nomenclature in physical signs. The interruption of pregnancy in tuberculous women was the subject of a large number of papers, but no new indications were given as to its adoption.

III.—ETIOLOGY AND EPIDEMIOLOGY.

There was little touched upon in the third section that had not already been considered at the Conference. Dr. GRIFFITHS (London), whose work for the Royal Commission on Tuberculosis is well known, sent in a paper on the relation between bovine and human tubercle bacilli. The whole feeling at the Congress tended to endorse the statement he made, that it was quite impossible to distinguish microscopically between the human and bovine tubercle bacilli.

CONCLUDING CEREMONIES AND RESOLUTIONS.

The last meeting of the Congress took place on Saturday morning, April 20th, and the social part of the arrangements closed on Sunday night with a reception at the Capitol, when the Forum was illuminated.

At its last session the Congress passed a host of pious resolutions. Of considerable importance, however, was the endorsement of the finding of the Conference on the question of bovine and human infection:

1. That the prevention of tuberculosis must be centred on the prevention of infection from man to man, and especially the infection of the family.
2. Infection of man by bacilli of bovine sources is less frequent, but it is necessary to maintain the prophylactic measures against infection from cattle.

The Congress urged notification in all cases of death from tuberculosis, and considered that in the interests of prevention all cases should be notified during life. It asked for the rigorous application of existing legislation on notification, and for its extension. Further, that to this end—the knowledge of the actual amount of tuberculosis—each State should institute antituberculosis dispensaries in its area.

In general, the Congress indicated a vast amount of antituberculosis effort, with only a small part of which has it been possible to deal here, but on all sides it was obvious that the fruit borne of this enthusiasm would be increased a hundredfold, were there measures in every country linked up and co-ordinated with each other. It was generally recognized at the Congress that the Report of the Royal Commission, and the co-ordinated measures with which this country is associated, indicate high-water mark in the scientific and administrative spheres.

The next Congress is to be held in London five years hence.

THE proceedings of the Governors of King Edward's Hospital Fund for London at their annual meeting on April 18th were, as usual, of a formal character, the only business to be transacted being the submission and adoption of the report of the General Council for the preceding year. The report, in addition to recapitulating events which have already been recorded in our columns, contained a plea for wider support for the fund, and a statement that the amount spent on its administration from the time of its foundation up to date had been only £1 5s. 3d. for every £100 received. In the course of the proceedings it was indicated that the issue of the report on the out-patient system in London, publication of which was delayed owing to the necessity of reviewing matters in the light of the possible effect of the National Insurance Act, might be expected at no very distant date.

MILK, BOILED AND UNBOILED.

THE Local Government Board has published a very detailed and careful report* by Dr. Janet E. Lane-Claypon on boiled milk as a food for infants and young animals. The report covers rather wider ground than its title might suggest, and it may be said at once that the evidence, both experimental and clinical, which Dr. Lane-Claypon has brought together emphasizes very forcibly the importance of breast-feeding for the young of all species, and the special importance of breast-feeding during the early weeks of life.

In studying the value of the milk of another species in the feeding of animals, a comparison was made between the value of raw and boiled milk. It was pointed out that the common use of the term "sterilized" milk is inaccurate, since milk which has been heated to 100° C. is not sterilized, and even considerably higher temperatures may not be sufficient to kill the spores almost always present.

EXPERIMENTAL EVIDENCE.

The evidence collected did not support the opinion sometimes expressed that calves do not thrive upon boiled cow's milk. Milk which was really sterilized might produce scouring; in certain experiments in which the results of boiled milk were not at first good, growth proceeded satisfactorily after the addition of sodium chloride or certain other salts. The general conclusion is that no serious loss of nutritive value is produced by the boiling of milk of the same species.

Experiments upon the relative nutritive value of raw and boiled milk of a different species confirmed the conclusion that the salt content was a point of great importance, and generally favoured the conclusion that young animals fed upon the milk of a suitable foreign species throve somewhat better if the milk was given boiled and not raw; the only exception was in the case of "germ-free" milk, that is to say, milk obtained with special precautions to protect it from bacterial contamination. In those cases in which the health of the animals fed on boiled or raw milk was inquired into after the cessation of the experiment, no constant difference could be detected.

CLINICAL EVIDENCE.

Difficulty was encountered in finding a sufficiently large series of cases of healthy infants fed upon raw and boiled milk respectively under conditions otherwise similar, and Dr. Lane-Claypon says that "it is impossible to avoid the impression that many of the opinions formed by medical men in private practice are based upon a comparison between the well-to-do baby fed upon expensive raw milk and under proportionately favourable conditions, and the baby of the poorer classes fed upon inferior boiled milk and under greatly inferior social conditions. Such comparisons, even if based—as they are in some cases—upon some degree of knowledge of the progress of the baby's weight, are valueless. It is only by feeding babies upon raw and boiled milk of the same quality that any reliable evidence can be obtained."

Clinical evidence was considered under two heads: Cases in which infants were fed on raw and boiled milk of the same species, and those fed on raw and boiled milk of another species.

Upon the first head the data are very limited, and, after enumerating certain records, Dr. Lane-Claypon writes:

The most numerous cases I have been able to discover are those of Professor Thiemich of Magdeburg. They are unfortunately as yet unpublished, although the data are available; but Professor Thiemich has been so kind as to give permission to me to quote his experiences for the purpose of this report. He has furnished me with a short report of his results as follows:

"In my wards the milk of all the new wet-nurses is given boiled only, until Wassermann's and Stern's reactions have been carried out.

"If it happens, as it frequently does, that one or other of the reactions is positive or doubtful, and there is no detectable evidence of specific trouble in either mother or child, I sometimes keep the wet-nurse for many months, and during the whole of this period the milk is only given boiled. I may add that in the case of an infant living with its parents which requires a wet-nurse or human milk for *allaitement mixte* it is only in very exceptional cases that I allow actual suckling. Otherwise only expressed and boiled milk, human milk, is

*Reports to the Local Government Board on Public Health and Medical Subjects. New series. No. 63. To be obtained through any bookseller. (Price 9d.)

given by the bottle in suitable quantities. Similarly, the milk of a feverish wet-nurse is boiled, not because of the risk of the direct passage of any organisms in the milk, but because of the possibility of outside contamination of the milk.

"On this system I have now seen a great number of children improve just as well upon boiled milk as happens with raw human milk.

"In a smaller number of cases raw and boiled human milk have been given alternately and systematically for various periods of days and weeks with the same result—namely, that no difference could be detected."

On the second head, the evidence in regard to infants fed respectively upon raw and boiled milk of another species, Dr. Lane-Claypon observes:

The great variety in chemical composition in the milks of different species leads to the assumption that the milk of each is adapted especially for the needs of that particular organism. It is conceivable, therefore, that in such a complex and presumably nicely-adjusted food as milk, the slight changes produced by boiling might have a more important effect upon the nutrition of the young animal of the same species than would be produced by the corresponding changes induced in the less well adjusted milk of a foreign species. From the evidence above given there can be no doubt that many babies thrive well upon boiled human milk, and hence it must be supposed either that the changes produced by boiling are insignificant, or that the milk is not so finely adjusted to the needs of the particular species as to lose by boiling any appreciable portion of its nutritive value. The importance of salts in the feeding of calves upon raw and boiled cow's milk has already been dwelt upon.

Certain observations by Finkelstein are set out, leading to the general conclusion that "no definite distinction between the results obtained by feeding upon raw and boiled milk respectively could be detected."

Dr. Lane-Claypon's own observations are founded upon the records of the "infant consultation" conducted by Dr. Ballin in the Naunyn Strasse, in Berlin. Children attending the consultation belong exclusively to the working classes, and the great majority are breast-fed, small bonuses being given to the nursing mothers. The cow's milk used is obtained from the municipal dairies, which obtain their milk from cows proved to be tubercle-free and kept on farms conducted upon model lines. The fat is never less than 3 per cent., and the bacterial count varies from 20,000 to 30,000 per c.cm.; the milk is thus of high purity. The milk is rapidly filtered, bottled, and cooled to between 3° and 4° C., and is sent to Berlin by special train and delivered in cooled vans. This milk is usually diluted for the infants, on much the same lines as in this country. The preparation of the milk in the home is supervised by the health visitor. It is brought to the boil and allowed to froth up twice; it is then covered and placed in a vessel of cold water.

Careful records are kept of the progress of the infant. In studying the material thus available the babies were divided into two classes:

1. Healthy babies of the average artisan class, fed upon milk in various forms, in order to have a control consisting of the average baby.
2. Healthy babies of the same class, but fed only upon boiled cow's milk, in order to study the difference, if any, produced upon the average baby of the class by feeding it exclusively upon boiled milk, as compared with the infant of Class 1.

Various precautions were taken to avoid the introduction of fallacies into the statistics, and it was decided to exclude from the control series all babies who had received less than four months' breast-feeding, and to exclude altogether (*a*) all infants who were over four months of age at the time of their first attendance; (*b*) all who did not attend over a period of at least four months with regularity; (*c*) all babies who were suffering from constitutional diseases, or who developed such during their attendance at the consultation; and (*d*) to exclude all babies who died during their attendance at the consultation, owing to the difficulty of ascertaining how far they had been initially healthy babies. Every baby still attending the consultation at the age of 12 months is examined for rickets, and an analysis of the figures did not justify a deduction of any greater incidence of rickets as a result of feeding upon boiled milk as compared with breast-feeding.

This part of the report is illustrated by tables and charts founded upon them. The general result is to show a significant difference between the average weight of infants fed upon the breast and upon boiled cow's milk in favour of the former, and a careful mathematical examination of statistics proved that an important factor in this result is the method of feeding. Each curve falls into three parts; the first part shows a rapid fall in the weight of babies fed upon boiled cow's milk throughout the two first eight-day periods, and no rise to the level of the first eight-day period until the 33rd to 40th day of life; the average weight of the breast-fed babies showed a rise from the first. The figures appear to indicate that the physiological loss of weight which occurs after birth is greatly accentuated in the case of children fed upon boiled cow's milk. In the middle part of the curves extending from the 40th to about the 230th day the curve showing the average weight of infants fed on boiled cow's milk is consistently lower than that for infants of the control series. The difference between the average weights of the two series begins to decrease at about the 180th day of life and disappears fairly rapidly until, at about the 230th day, it is no longer present. No subsequent difference is to be detected down to the end of the first year, though there is possibly a variation in favour of the boiled milk series towards the end of the year. Dr. Lane-Claypon is careful to point out that the conclusions cannot be at once applied to the population at large, since there can be little doubt that the favourable result was due in a great measure to the medical care and knowledge available for the babies attending the consultation.

Dr. Lane-Claypon also calculated the percentage-rate of growth of babies of both series. These calculations were made in three ways:

1. By estimating the percentage increase per kilogram of body weight during each period of eight days in each series. The result is shown in the remarkable curves here reproduced (Fig. 1). As will be seen there is an extreme

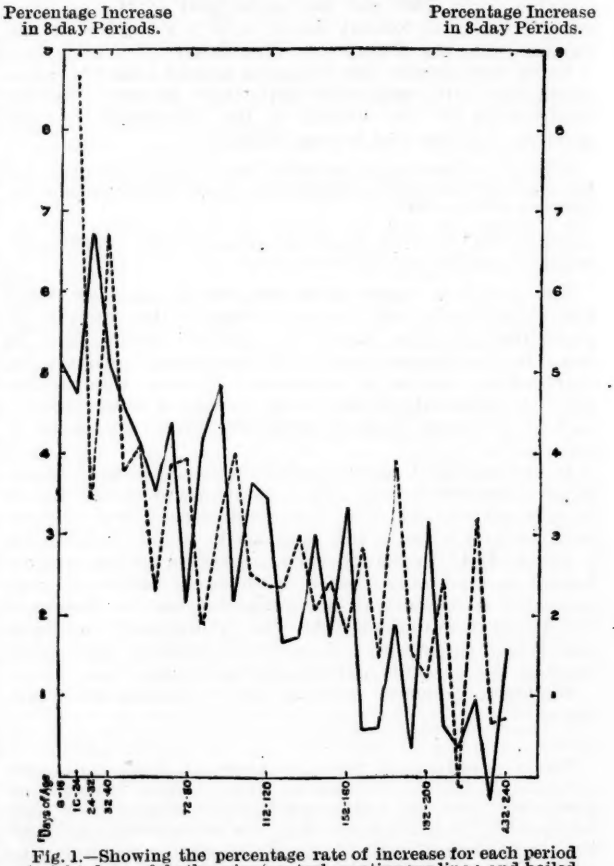


Fig. 1.—Showing the percentage rate of increase for each period of eight days of both series (control, continuous line; and boiled cow's milk, dotted line) down to the age of 8 months.

irregularity in the rate at which the weight increases in both series, but after the first two estimations it is difficult to point out any marked difference between the values of the two series.

2. By estimating the rate of growth by measuring the time required by the babies of each series to double the initial average weight, the values of the first eight-day period being omitted on account of the small number of

observations available in the series fed upon boiled cow's milk. The result was to show little difference between the two series. The babies fed upon boiled cow's milk doubled their weight at the 185th to 192nd day, a fortnight earlier than the breast-fed babies, but they started with an initial lower weight, since the first value was omitted.

3. By estimating the percentage deficit of the average weight of babies fed upon boiled cow's milk as compared with the weight of the breast-fed babies, the weights of the latter being taken as 100. This method showed that the deficit did not at any period of life exceed 10 per cent., and during the greater part of the period under observation was much less. Dr. Lane-Claypon again points out that this favourable result is probably due in large measure to the fact that the babies were attending the consultation, and were therefore under favourable conditions.

The material was further analysed rather more closely with a view to getting two series for comparison, one consisting of babies exclusively breast-fed, and the other of babies who had never been breast-fed but fed from birth upon boiled cow's milk only. The records of 130 infants who had received only breast milk were available from about a fortnight after birth up to at least the 200th day. Only 78 babies who during the same period of life had received only boiled cow's milk were available, but it was

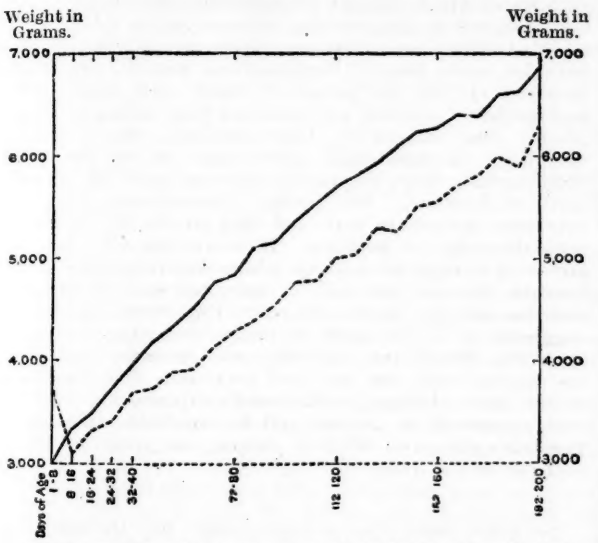


Fig. 2.—Showing the average weight of 130 infants exclusively breast-fed and of 119 infants exclusively fed upon cow's milk down to 200 days of age (see text).

found after statistical study of the material that it was legitimate to add 41 babies who had similar attendance records and had been fed for periods of not more than eight days upon the breast before receiving boiled cow's milk as their sole food. The result of the comparison is shown graphically in Fig. 2, while Fig. 3 shows the percentage-rate of growth, starting from the sixteenth day of life. The divergence is rather more accentuated than in the figures obtained from the analyses of the other series referred to above.

Infantile Scurvy.

The main objection which those who would defend the routine use of boiled cow's milk as a diet for infants who cannot be suckled have to meet is that a rigid adherence to it may be followed by scurvy. Dr. Lane-Claypon discusses this question in the light of recorded experience. This experience seems to amount to this—that the disease, at any rate in a well-developed form, is exceedingly rare, even in infants fed upon boiled milk, and that it has occurred in infants suckled by the mother; that, save in these very exceptional cases, the infants who have suffered from it have been fed upon milk which had been subjected to prolonged boiling or sterilizing, or to unusually elaborate manipulation, and that a cure can be effected, unless the patient is already moribund, in an "almost dramatic manner." The adjective is undoubtedly fully justified, and the transformation worked in the child usually disposes the observer to conclude that the fresh food has supplied some ingredient lacking in the prepared. But the conclusion is not inevitable, since the effect may be due to some ingredient which has come into existence during the process of keeping and preparing the milk. There is a good deal to be said for this alternative suggestion, and Dr. Lane-Claypon quotes the following striking experience of Plantenga:

Plantenga has published an account of an outbreak of Barlow's disease which occurred among the children of his consultation. During one year the milk which was given out at his consultation was pasteurized overnight by heating at 70° C. for half an hour. The milk, therefore, although not boiled was yet subjected to prolonged heating. In the morning this milk was further heated, being boiled for five minutes in a Soxhlet's apparatus. In that year 23 cases of Barlow's disease developed among the babies of the consultation, out of a total number of 200.

As a result of this outbreak the routine of the milk preparation was changed, and the morning's milk was merely

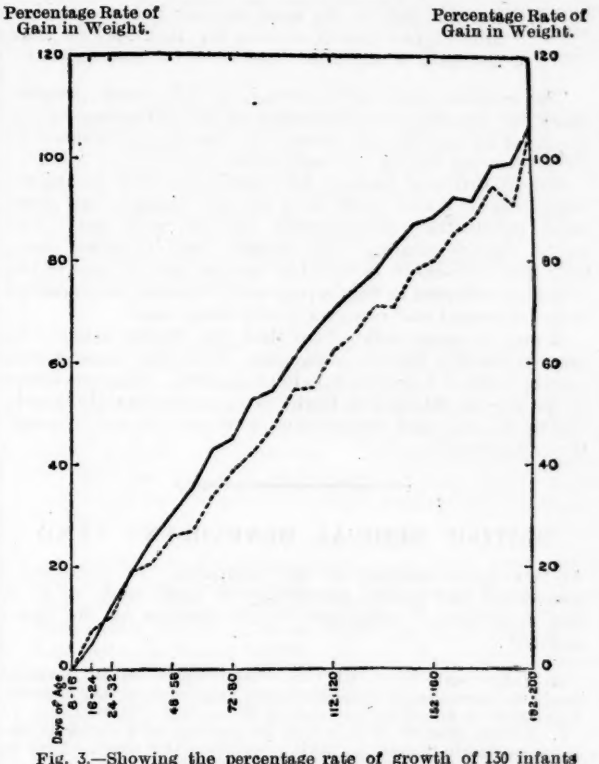


Fig. 3.—Showing the percentage rate of growth of 130 infants exclusively breast-fed, and of 119 infants exclusively fed on boiled milk, starting from the sixteenth day of life up to the age at which the weight was doubled.

pasteurized without being kept. No case of Barlow's disease occurred on this form of milk. Plantenga attributed the occurrence of the trouble to the length of time the milk had been kept before it was used, and he pointed out that the value of raw milk in certain cases may arise from the fact that it is given sooner after milking.

We should be disposed to attach a great deal more weight to evidence such as this than to the alleged extreme rarity of the disease. In the first place, the misfortune can only befall the child of a very scrupulous mother, a certain—often, no doubt, a very small—amount of mixed feeding being the rule from an early age, even among classes far above the poverty line; in the second place, though well-developed cases are undoubtedly rare, minor degrees are probably not very uncommon. In considering this matter, and indeed the report as a whole, the warning which Dr. Lane-Claypon herself gives more than once must always be borne in mind. The conclusions drawn can be applied with confidence only to conditions identical with or closely similar to those operative in the series of infants upon which it is mainly founded. For example, in this matter of scurvy the conclusions apply only to infants fed on milk boiled shortly after being drawn. It would be unscientific and unsafe to transfer them to milk which has been really sterilized at a high temperature, or to the various forms of milk powder and concentrated milk on the market which are recommended as exclusive diets for infants.

Summary and Conclusions.

Dr. Lane-Claypon concludes her report in the following terms:

The balance of evidence, both experimental and clinical, points in the main to the same conclusions. Both lines of research show—

1. That there is apparently no serious loss of nutritive value produced by feeding an animal upon boiled milk derived from an animal of the same species. At the same time it must be pointed out that the published evidence on this point is scanty.
2. That, when an animal is fed upon the milk of another species, the milk from which has been found to be suitable for this purpose, such small differences as have been found in the nutritive values of raw and boiled milk have been in favour of boiled milk.
3. That the milk of the same species has a considerably higher nutritive value for that species than the milk of any other species so far investigated.

The evidence dealt with throughout this report emphasizes very forcibly the importance of breast-feeding for the young of all species, and shows the special importance of breast-feeding during the early weeks of life.

Where artificial feeding has been employed in animal experiments, boiled milk of a foreign species has given more satisfactory results than similar milk raw. The Berlin figures dealing with infants fed on boiled cow's milk give extremely favourable results, and in view of the evidence collected in this report could scarcely be expected to be surpassed had raw cow's milk been used.

It may be again pointed out that the Berlin babies who are artificially fed in connexion with the consultation receive milk of a known excellent quality. The excellence of the results obtained in Berlin are almost certainly largely due to the care and supervision exercised at and through the consultation.

BRITISH MEDICAL BENEVOLENT FUND.

At the April meeting of the Committee 18 cases were considered and grants amounting to £180 made to 17 of the applicants. Appended is an abstract of the cases assisted:

1. Widow, aged 89, of M.R.C.S. Small capital left by husband has been unavoidably exhausted, and applicant is now entirely dependent on an old age pension of 5s. a week. Voted £12.
2. Widow, aged 47, of M.R.C.S. No income, and is endeavouring to maintain herself by taking boarders at a small house in the country. Voted £10.
3. Daughter, aged 64, of late M.R.C.S. Has supported herself and a crippled sister by teaching and acting as organist, but now finds great difficulty in obtaining pupils. Voted £12, to be shared with sister.
4. Widow, aged 74, of L.R.C.P., L.R.C.S.Edin. Quite unprovided for at husband's heath a few months ago, and has applied for an old age pension. Voted £12.
5. Daughter, aged 66, of late M.R.C.S. Used to be a police-court missionary, but was obliged to resign on account of ill health, and is now entirely dependent on friends. Voted £12.
6. Wife, aged 39, of M.R.C.S., who is incapacitated owing to a mental breakdown. Endeavours to support herself and two sons by taking boarders, but is unavoidably in arrears with her rent. Voted £15.
7. Widow, aged 38, of L.R.C.P., L.R.C.S.Edin. Unprovided for at husband's death a few years ago, and supports herself and two children by nursing, but asks for a little help towards the education of the elder. Relieved once, £10. Voted £10.
8. Widow, aged 39, of L.R.C.P., L.R.C.S.Edin. Two children, the elder a pupil governess and the younger at an institution. Endeavours to maintain herself by nursing, but finds difficulty in getting continuous work. Relieved six times, £50. Voted £5.
9. Widow, aged 53, of L.F.P.S.Glasg. No income. Six children, of whom two are dependent and one is temporarily out of work owing to ill health. Relieved eight times, £82. Voted £12.
10. Daughter, aged 57, of late L.R.C.P.Edin. Used to be a dressmaker, but is now unable to obtain regular employment, and is dependent on the help of a friend and such occasional light work as she can find. Relieved seven times, £58. Voted £6.
11. Widow, aged 41, of L.R.C.P., L.R.C.S.Edin. Seven children, aged 15½ to 1½, and income only 15s. a week. Voted £12.
12. Daughter, aged 56, of late M.D.Edin. No income; used to be a governess but is now dependent on small uncertain earnings from sewing. Relieved twice, £15. Voted £12 in twelve instalments to be shared with her sister.
13. Daughter, aged 65, of late M.R.C.S. Is unfitted for any occupation and practically dependent on this fund and a small pension from another charitable society. Relieved thirteen times, £132. Voted £12.
14. Daughter, aged 50, of late M.R.C.S. Used to be a companion, but is now nearly blind and quite incapable of any occupation. Small savings exhausted by illness. Relieved once, £12. Voted £12.
15. Widow, aged 49, of L.R.C.S., L.R.C.P.Edin. No income; two sons only able to give slight help. Relieved eight times, £87. Voted £2 and case to be reconsidered.
16. Widow, aged 49, of M.B., B.Ch.Aberd. After husband's death a few years ago supported herself as a nurse, but is now quite broken down in health and dependent on relations who can ill afford to help. Relieved four times, £37. Voted £12.
17. Daughter, aged 69, of late M.R.C.S. Was provided for at father's death, but lost part of her capital through the failure of a bank and the rest in the endeavour to establish a boarding house. Relieved twice, £24. Voted £12.

Contributions may be sent to the Honorary Treasurer Dr. Samuel West, 15, Wimpole Street, London, W.

SCIENCE NOTES.

Some entomological observations made by Roubaud[1] in South Africa are of interest from the fact that they deal with forms which directly or indirectly affect man. The first observation relates to the hitherto unique case of a fly larva (*Auchmeromyia luteola*), which not only bites man, but also sucks blood. Roubaud now records two other instances of flies the larvae of which suck blood. The two species in question are new, and they belong to a new genus. One attacks the Cape ant-eater, the other the wart-hog. Roubaud adds some notes on the habits of these larvae. They are hardy creatures, and live in the earth in burrows. His further observations relate to cutaneous myiasis in man, and they are chiefly concerned with the mode of infection. It is well known that the larvae of *Cordylobia anthropophaga* are frequently found beneath the skin not only of man, but also of domestic animals, and give rise to tumours. Two views have been suggested as to the mode of entry—first, that they bore their way directly into the skin, and secondly, that they are ingested with the food and eventually find their way to the skin. Judging by Roubaud's experiments, the first view appears to be correct, and he concludes that infection takes place as a result of sleeping on ground in which such larvae are living.

So much solid CO_2 is now used for therapeutical purposes that it is interesting to learn the results of some experiments upon the electrical properties of this substance brought before the Roentgen Society on April 2nd by Mr. C. E. S. Phillips, F.R.S.E. It has often been noted on collecting carbon dioxide snow that an unpleasant shock has been produced, and in the dark-room it is possible to see quite a large number of sparks flying about. Mr. Phillips finds that a very high charge, sufficient to make the needle of an electrostatic voltmeter register 6,000 volts, may be accumulated when liquid CO_2 is emitted into the air from an ordinary steel cylinder at a high speed through a metallic nozzle. The deposited moisture at the nozzle takes the form of little beads or globules, which are particles of ice, and as these become electrified they are thrown off in a fine shower. Some of the gas, after it had come out of the nozzle, was passed into an ionization electroscope, and brought down the gold leaf very rapidly; more rapidly when it was positively electrified than when the electrification was negative. It is possible to electrify a stick of CO_2 snow by rubbing it with a piece of silk or similar material, and the electrification is always negative save when the snow is rubbed against a surface more easily removed by friction than its own, such as a deposit of hoar-frost on a layer of ice. A block of the snow retains its charge for a considerable time, so that, although there is a rapid evaporation of gas from its surface, it appears as though there were an interchange of electrified particles, which are handed on from molecule to molecule.

[1] *Comptes rendus*, cliii, p. 553, and clv, p. 780.

PROGRESS OF CREMATION.

Great Britain.

IN the JOURNAL of April 20th we published a report of the annual meeting of the Cremation Society of England, held on March 27th. The President in his address stated that cremation was making progress in this country, though slowly. The subjoined table shows the number of cremations carried out in Great Britain since the opening of Woking Crematorium in 1885.

From this table it will be seen that the total number of cremations in Great Britain during 1911 was 1,023. Of that number 656 were carried out at the two metropolitan crematoriums—Golder's Green and Woking—managed by the London Cremation Society. This shows an increase of 177 as compared with last year.

Germany.

In Germany cremation has made much more rapid progress. The various societies have a total membership of about 60,000. The total number of bodies disposed of by this method in 1911 was 7,555, as against 6,074 in 1910, an increase of 1,481, or more than 24 per cent. The figures for the several crematories are as follows (the figures in brackets represent the number in 1910):

Baden-Baden	71 (48)	Leipzig	905 (477)
Bremen	561 (454)	Lubeck	98 (50)
Chemnitz	630 (643)	Mainz	450 (410)
Coburg	326 (310)	Mannheim	218 (188)
Dessau	33 (25)	Meiningen	17
Dresden	328	Offenbach a. M.	268 (208)
Eisenach	162 (164)	Pössneck	88 (89)
Gera	213 (79)	Reutlingen	13
Göppingen	12	Sonneberg	2
Gotha	598 (549)	Stuttgart	438 (356)
Hamburg	669 (678)	Ulm	336 (297)
Heidelberg	106 (112)	Weimar	9
Heilbronn	61 (36)	Zittau	289 (206)
Jena	391 (413)	Zwickau	140 (139)
Karlsruhe	123 (143)		

From this list it will be seen that six new crematoriums were opened in Germany during 1911, and therefore afford no figures for comparison; these are at Reutlingen, Dresden (opened May 19th, 1911); Meiningen (opened on October 8th); Göppingen (opened on October 8th); Weimar (opened on December 8th); and Sonneberg (opened on December 12th).

The progress of cremation in Germany may be estimated from the steadily ascending scale of the numbers. In 1878 only 1 body was burnt; in 1880 there were 16; in 1885 there were 79; in 1890 there were 111; in 1895 there were 266; in 1900 there were 639. From that time the increase was much more rapid, the number of cremations in 1905 having been 1,768; in 1910, as already said, 6,074; and 7,555 in 1911. The total number of cremations carried out in Germany up to December 31st, 1911, was 37,529.

Now that a law permitting cremation has been passed in Prussia, there will doubtless be a still further increase in the number disposed of in this manner. The law was passed in the face of much opposition, but in its passage through the Legislature was so modified that its sphere of operation was greatly restricted. Among other provisions was one which can only have been introduced with a purpose hostile to the general acceptance of cremation. This was that in the case of women the body must be examined, and the evidence of virginity, if present, mentioned. Naturally the proposed *post-mortem* outrage excited widespread indignation. The women of Berlin held a meeting of protest, and sent a petition to the Minister of the Interior asking for the repeal of the obnoxious clause. Herr von Dallwitz bowed before the storm, and it is stated that as a matter of fact only one certificate was given. That was in the case of a lady aged 75, who was declared by a medical certificate to be a virgin—"as far as that can be established." This incident shows to what lengths the opponents of cremation will go to make it unpopular.

Austria.

The Central Cremation Society, whose headquarters are in Vienna, has, according to the official report for 1910, 1,172 members. The ten local affiliated societies have 2,029, making a total of 3,201. These figures, as compared with those for 1909, represent an increase of 6.6 per cent. in the membership of the Central Society, and 23.1 per cent. in that of the local societies. In the course of 1910 the bodies of 115 Austrian subjects were burnt in German and Swiss crematories.

Belgium.

There is a Belgian Society for the propagation of cremation. Its head quarters are in Brussels. The honorary presidents are Count d'Alviella, senator; M. Paul Janson, a representative; and M. Ernest Solvay, a former senator. There is also a society of the same kind which has its head quarters in Antwerp. These societies furnish members the names of undertakers who guarantee to have cremation carried out with proper precautions in Paris or at Mainz.

Switzerland.

Cremation was legalized in Switzerland in 1884. There are now ten crematories in that country—at Zürich (opened in 1889), at Basel (1898), at Geneva (1902), at Saint Gall (1903), at Bern (1908), at Lausanne (1909), at La-Chaux-de-Fonds (1909), and at Winterthur, Brenné, and Aarau, each opened in 1911. These crematories are the property of societies, with the exception of those at Basel, Geneva, and Zürich, which belong to the municipalities of those towns. There are eighteen cremation societies in Switzerland. The progress of that method of disposing of the dead may be judged from the fact that in

Table of Cremations carried out in Great Britain since the opening of Woking Crematorium in 1885.

	1885–7.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1920.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	Total.
Woking	26	28	46	54	99	104	101	125	150	137	173	240	240	301	273	275	143	138	95	140	108	119	105	106	**114**	**3,440**
Manchester	...	...	...	...	...	3	30	47	58	52	51	62	88	83	6	81	92	98	97	90	98	116	106	114	**124**	**1,585**
Glasgow	...	...	...	...	...	...	...	...	1	10	16	12	16	20	18	20	24	19	35	44	30	28	30	28	**39**	**390**
Liverpool	...	...	...	...	...	...	...	...	...	2	10	27	23	40	40	54	35	40	35	46	34	42	46	37	**50**	**551**
Hull	...	...	...	...	...	...	...	...	...	...	...	...	...	...	17	13	18	20	15	17	29	37	15	21	**25**	**227**
Darlington	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	2	1	7	4	13	8	6	9	9	**12**	**72**
Golder's Green	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	158	220	252	298	290	364	421	415	**542**	**2,965**
Leicester	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	5	8	16	12	12	14	19	16	**13**	**116**
Birmingham	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	19	22	25	33	18	30	38	**44**	**230**
Leeds	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16	15	16	24	19	12	**17**	**119**
Ilford	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9	23	18	19	24	22	**20**	**135**
Bradford	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	14	13	6	13	14	**13**	**74**
Sheffield	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	6	18	12	18	8	**10**	**79**
Total	26	28	46	54	99	107	131	172	209	201	250	341	367	444	445	451	477	569	604	743	707	795	855	840	**1,023**	**9,984**

* Golder's Green Crematorium in operation.

1889, when the first crematory was opened at Zürich, 21 bodies were burnt, whilst in 1910, when there were seven at work, the number of cremations was 1,210.

Other Countries.

We have no recent statistics about cremations in other countries. It may be remembered, however, that in the United States there were, in 1908, 38 crematories, in Italy there are 28, in France 5, in Sweden and Norway 4, in Russia 2, and in Denmark 1.

LITERARY NOTES.

AMONG the forthcoming Oxford Medical Publications is *The Practitioner's Encyclopaedia of Medicine and Surgery in all their Branches*, edited by J. Keogh Murphy, M.C.Cantab., F.R.C.S. The prospectus states that this encyclopaedia "is in no way intended to compete with the larger works of reference. It is primarily meant to be an indispensable companion to the practitioner. The articles are written by experts in their own subjects, and are all of them essays which go directly to the point. Anatomical and pathological details are not included, except where they are of practical application or essential to the elucidation of the subject. Surgical operations are not described, except such as come well within the scope of every practitioner. On the other hand, special emphasis has been laid upon diagnosis and treatment, and in the compilation of the work conciseness coupled with completeness, terseness with lucidity, have always been aimed at." Among the contributors are Dr. J. C. McVail, Sir William Osler, Dr. A. F. Hertz, Dr. F. W. Mott, Dr. C. O. Hawthorne, Dr. G. F. Still, Dr. Robert Jones, Dr. T. B. Hyslop, Dr. Mercier, Sir Thomas Clouston, Sir W. Watson Cheyne, Professor Sims Woodhead, Mr. Sampson Handley, Mr. Arthur Barker, Mr. Burghard, Mr. D'Arcy Power, Sir F. C. Wallis, Mr. Bruce Clarke, Dr. Hastings Tweedy, Dr. Cuthbert Lockyer, Dr. Victor Bonney, Dr. Comyns Berkeley, Dr. H. Jellett, Mr. Devereux Marshall, Mr. Arnold Lawson, Mr. Hunter Tod, Dr. J. H. Sequeira, Dr. Pernet, and Dr. Galloway. The work will be issued complete in one volume of about 1200 pages. To subscribers in advance the price is 25s., payable to the Managers, The Oxford Medical Publications, 20, Warwick Square, London, E.C.

We have received a bibliography of the published writings of the late Sir Samuel Wilks, compiled by Mr. William Wale, Wills Librarian, Guy's Hospital, and reprinted (with additions) from the *Guy's Hospital Gazette* of November 25th, 1911. The list is preceded by a short biographical note of the distinguished physician in which we find the following narrative, taken from our own columns of August 25th, 1866. As it is perhaps not generally known that Sir Samuel Wilks's career was nearly being brought to an untimely end, we think it may be interesting to some of our readers to reproduce the account, which appeared under the title "Narrow Escape":

> On Tuesday week, Dr. S. Wilks, who is staying at Scarborough, started alone along the sands to Filey. After walking about five miles, he found the projecting rocks hindered his further progress. He attempted to retrace his steps, but the tide having risen considerably, he was soon hemmed in. He sought refuge in the cliffs. When the tide had receded it had become dark, so that he durst not come down, but was obliged to remain the whole night, and unfortunately when daylight appeared the tide had again returned, and he was compelled to wait for hours. On Wednesday morning, Mrs. Wilks and her son proceeded to Filey, and having no tidings of him, engaged the services of some fishermen, who, with the assistance of ropes, went over the cliffs and explored the rocks. After searching in vain for some time, they found that Dr. Wilks, exhausted, had crawled over the rocks to the door of a cottage on the beach. The poor woman at once admitted him, and administered a little brandy to him. His clothes, which were saturated to the neck, were immediately taken off, and he was put to bed, and messengers were afterwards dispatched to Scarborough for a carriage, by which he was taken home to his hotel.

The bibliography extends over twenty-three printed pages, and is a striking proof of the range and variety of Sir Samuel Wilks's intellectual interests.

Novelists must of course draw their characters from real life, and much time and trouble have been given to the attempt to trace the originals. We all know how Dickens had to confess with sorrow that his pen ran away with him in his picture of Harold Skimpole, in which the features of Leigh Hunt were at once recognized. Writers of fiction are usually careful to disguise their originals, and sometimes mix the characteristics of different persons. Particular touches are, however, often copied from the unconscious model. There is an amusing passage in Sir Arthur Conan Doyle's *Stark Munro Letters*, in which Cullingworth, whose originality takes the form of charlatanism, is represented as saying:

> "Hetty's riled because their wives wouldn't call upon her," he cried. "Look at that, my dear," jingling his bag. "That is better than having a lot of brainless women drinking tea and cackling in your drawing-room. I've had a big card printed, Munro, saying that we don't desire to increase the circle of our acquaintance. The maid has orders to show it to every suspicious person who calls."

On first reading this we were struck by the dainty device of the card warning off visitors. We have since found the source—unless it be a coincidence—of that invention in Captain Owen Wheeler's "Running Record of Military Life and Incident in the 'Shiny East,'" which appeared in *Navy and Army Illustrated*. It is there related of a distinguished Surgeon-General, still among us, who had won his V.C. in the Mutiny and had served in the Crimea, China, and New Zealand, and also in the Ashanti war of 1873–74. "He was not, however," says Captain Wheeler, "generally popular at Simla, for he was, to say the least, brusque in manner, and was anything but suave in his relations with Simla society. It was common talk that callers at his house were sometimes confronted by a notice handed them by a servant to the effect that Sir A. and Lady —— 'did not desire to extend the circle of their acquaintance.'"

Charles Dickens is sometimes sniffed at by the superior person of the present day, but whatever may be thought of his sentiment and even of his humour, there can be no doubt of his marvellous power of observation. The New York *Medical Journal* recently called attention to the fact that he had noticed the voice characteristic of adenoid vegetations before the condition was scientifically described by Meyer of Copenhagen. In proof of this our contemporary quotes the following passage from the *Uncommercial Traveller*, a collection of essays reprinted from *All the Year Round*:

> The Refractories were picking oakum, in a small room giving on a yard. They sat in line on a form, with their backs to a window; before them, a table, and their work. The oldest Refractory was, say twenty; youngest refractory, say sixteen. I have never yet ascertained in the course of my uncommercial travels, why a Refractory habit should affect the tonsils and uvula; but, I have always observed that Refractories of both sexes and every grade, between a Ragged School and the Old Bailey, have one voice, in which the tonsils and uvula gain a diseased ascendancy.

Dickens notes later that one of the "refractories" laughed "very uvularly." We may point out that long before this, in *Oliver Twist*, Dickens had described the adenoid voice in the conversation of Barney, the associate of Fagin. When Fagin calls at the public-house in Saffron Hill and cautiously inquires if there is anybody there, Barney replies, "Dot a shoul," and it is added that his words, whether they came from the heart or not, "made their way through the nose." He qualifies his statement by saying, "Dobody but Biss Dadsy," adding that the said Nancy has "bid havid a plate of boiled beef id the bar." That the condition is not a mere cold is shown by the fact that all through the book Barney speaks in the same way. Thus when Bill Sikes appears at the house of call before the burglary he is invited by Barney to "cub in." Oliver is referred to by him as "Wud of Bister Fagin's lads." When Noah and Charlotte arrive at "The Three Cripples" Barney tells them that "is the dabe of this ouse." When they ask if they can sleep there he answers, "I'b dot certaid you cad, but I'll idquire." When Fagin comes to ask after some of his young pupils Barney warns him. "Hush: stradegers id the next roob," adding the information "ad rubs uds too. Frob the cuttry but subthig in your way or I'b bistaked." Doctors have been familiar with enlarged tonsils for more than two thousand years; Celsus describes a method of removing them by enucleation. And yet it is not fifty years since Meyer peeped behind the veil that hid adenoids.

British Medical Journal.

SATURDAY, APRIL 27TH, 1912.

THE SLEEPING SICKNESS RESERVOIR

IF, at the present day, evidence in favour of the need for further organized experimental investigation on a large scale were lacking, it would be furnished in ample measure by the Colonial Secretary's reply to Dr. Chapple's question (p. 977) as to the administrative action likely to be taken in view of the additional evidence afforded by a recent paper of Kinghorn and Yorke in regard to the existence of a so-called "game reservoir" of human trypanosomiasis. The part of prophet has not been played successfully by many in the drama of science. It is easy enough to hold an empirical opinion and to acquire a certain reputation as a *post-factum* seer—intuition may bless a fortunate few—but experience is, in the event, the only safe and reliable guide and criterion of human affairs. To be really useful and valuable, however, experience requires to be reinforced by accurate observation and correct interpretation, and these are in every case functions of the era in which they are made. The natural tendency of observation is towards greater and greater detail; that of interpretation, on the other hand, is towards wider and more comprehensive generalization. In this connexion, nevertheless, the prime and essential factor is experience. In matters scientific, and indeed in many other matters, this factor is frequently not available, and for it must be substituted trial or experiment. It is precisely for lack of this that Mr. Harcourt's reply is non-committal, and therefore necessarily inconclusive. Dr. Chapple's question was a poser; it savoured much of the nature of a conundrum.

To arrive at some sort of conclusion—we cannot say definite conclusion—as to the value and significance of the Colonial Secretary's answer, it is necessary to analyse the facts of the case as they are presented to us. Although on slender grounds, the matter has been discussed in these columns before now, but its importance warrants a restatement. Before the arrival of the Royal Society's Commission in Uganda it was generally believed that *Trypanosoma gambiense* had an almost exclusive predilection for man. Towards the end of the inquiries of the Commission, however, various scattered observations and the resulting logical deductions caused this belief to be challenged, and the question was mooted as to a possible "reservoir" source of infection. Attention was naturally directed in the first place to mammals, but birds and even reptiles did not escape incrimination, these latter, it should be remarked, by others than the Royal Society's Commissioners. Sir David Bruce and his colleagues were unfortunately unable to devote adequate attention to this important point, but they did furnish[1] a certain amount of evidence that cattle could harbour the trypanosome of sleeping sickness. In a limited number of experiments they showed that cattle could be infected with *T. gambiense* by means of artificially and naturally infected flies, and that the blood of these infected cattle was infective for monkeys and goats. They also found a solitary case, out of 17, of natural infection in a cow. These results could hardly be regarded as affording sufficient basis for administrative action. It may be noted that the Commissioners' report does not make it clear that the cattle succumbed to sleeping sickness. In one instance they state that the animals developed sleeping sickness, but in most they merely mention the fact that *T. gambiense* was found in the blood.

Such was the state of affairs in experiment and experience before this recent work of Drs. Kinghorn and Yorke.[2] Speculation and conjecture have been rife, as might be expected, but no further facts have been put forward to serve as a guide in one direction or another. The communication on which Dr. Chapple's question was based has, however, made the matter more concrete. In Northern Rhodesia, where Kinghorn and Yorke conducted their experimental investigations, human trypanosomiasis is caused by *T. rhodesiense*, an organism differing in strain if not in species from *T. gambiense*. This organism is an extremely recent[3] addition to the quotum of human parasites, and has hitherto been recognized to occur only in the southern parts of the African continent. The tsetse fly here concerned is *Glossina morsitans* instead of *G. palpalis* as in Uganda. The gist of the experimental results is that trypanosomes indistinguishable from *T. rhodesiense* were found in tsetse flies in the natural state, and also in various game under natural conditions. In each case these organisms were examined morphologically and their virulence tested on monkeys and other animals. Altogether 98 animals were examined, and 25 of these showed trypanosomes in their blood. In another half-dozen cases the blood was found to be infective for monkeys, although no organisms were seen at the first examination. With the exception of the native dog (*Lycaeon pictus*), all the infected animals were game—waterbuck, warthog, hartebeest, and mpala.

It cannot, however, be assumed that game are the chief or only hosts of this trypanosome on account of the fact that 85 per cent. of the animals examined belonged to this class. Of these 85 animals 30 were found to harbour *T. rhodesiense*, a proportion which seems to render comment unnecessary.

The speculation of the past two or three years would thus appear to have received ample confirmation, and the logical corollary would be that an analogous condition exists in Uganda and other regions where sleeping sickness is endemic.

In this wise Dr. Chapple's question bears point, and in view of these facts of experiment and experience the question arises what is to be done, what administrative measures are to be adopted "to protect human life, domestic animals, and British trade from the consequences of this disease"? It is a knotty problem, and it is exactly here that experience fails to go far enough. Mr. Harcourt had none to guide him. Remove the "reservoir" by exterminating the game is a suggested administrative measure, but what assurance have we that such action would not determine an increased incidence of tsetse fly attacks, and so of trypanosomiasis on domesticated animals and man? That the fly itself would die off if its natural food in the shape of the blood of game were removed is an assumption for which we have absolutely no warrant. What, then, are we to do? Mr. Harcourt temporizes. Let us wait till the present Royal Society Commission reports on the

[1] *Proc. Roy. Soc.*, B. 82, 1910, pp. 480-4.

[2] *Ann. Trop. Med. and Parasit.*, vi, 1912, pp. 1-23.

[3] Stephens and Fentham, *Ann. Trop. Med. and Parasit.*, iv. 1910, pp. 340-50.

investigations now in hand. Very well; but if this report be confirmatory, what then remains for us to do? Northern Rhodesia and Nyasaland must be opened to British trade and commerce, civilization must advance even into the heart of Central Africa. We have not the slightest doubt that the game must and will go in time, but it will be a long time. We cannot forget that in India, for instance, where civilizing influences have been in action for a length of time which can hardly be measured, tigers and cobras still abound. The prospect in this direction is not immediately hopeful. To exterminate the flies appears to be a task beyond present human powers, even although the tsetse may not be a particularly invulnerable insect. The Sleeping Sickness Commission has during the last two years been making a special inquiry into the habits of tsetse flies in Uganda, with the view, presumably, of discovering some means of reducing their numbers or utterly eradicating them, but nothing has come of this as yet. A combination of both policies, together with a careful watch over domestic stock, seems to offer the only feasible solution of the difficulty, and we must trust to increasing knowledge and education to devise precautionary measures. We cannot forbear from thanking Dr. Chapple for bringing this important matter before public notice, or from sympathizing with Mr. Harcourt in an extremely difficult position.

THE METROPOLITAN PROVIDENT MEDICAL ASSOCIATION.

THE annual report of the Metropolitan Provident Medical Association contains some material of interest in view of the possibility that this association may be recognized under the National Insurance Act as a medium for providing medical attendance for the insured in certain districts. The association is under the management of a council of over seventy members, of whom about one-fourth are medical practitioners. Its objects are said to be "to provide upon principles of mutual assurance by means of small periodical payments, efficient medical treatment and medicine for those members of the working classes and their families who are unable to pay the ordinary medical fees, and to co-operate with the governing bodies of the metropolitan hospitals in order that they may be relieved of the large number of ordinary cases of illness that at present overcrowd their out-patient departments, and also have referred to them from the provident dispensaries cases which require special hospital treatment and nursing or are suitable for clinical instruction." These objects it is sought to attain by the establishment in suitable districts of provident dispensaries under the management of local committees.

It is not surprising to read that the council of the association finds it difficult to speak with any confidence as to its future under the Insurance Act. It is, however, pointed out that, apart from any question of the utilization of the dispensaries in the treatment of insured persons, married women and children who are not employed persons form a very large percentage of the members of the provident dispensaries, and will still require, for the present at any rate, to be provided with medical treatment in the same way as to-day. In co-operation with the London Provident Dispensaries' Council, the association last year drew up a statement and resolutions which were sent to the Chancellor of the Exchequer and to members of Parliament, and all provident dispensaries in London were requested to co-operate in trying to secure recognition under the Insurance Act. The document referred to states that there are at present in London alone over 110,000 persons insured for medical attendance under the dispensaries, and if the principal country dispensaries are also included the membership—men, women, and children—exceeds 350,000. The dispensaries, therefore, claimed that they had the machinery for carrying out the provisions of the Insurance Act in the districts they covered. They had panels of medical men, open to all general practitioners, the members had a free choice of doctor from the panel, and arrangements were made for the dispensing by qualified dispensers of medicines prescribed by the doctors, the drugs being purchased wholesale by independent committees. The fear was expressed that though the dispensaries are now mostly self-supporting, it would be difficult to carry them on for mothers and children alone if the wage-earning members were taken away by the Insurance Act. If the dispensaries were utilized for the medical benefits of the insured the result might be different, and it was therefore urged that the dispensaries should be utilized for the administration of the medical benefits under the insurance scheme; that the appointments on the medical staffs should be open, as now, to all general practitioners; that each insured person or subscribing member should have free choice of doctor from that staff; that, in accordance with existing regulations, only persons whose total income is not over £104 a year should be eligible for medical benefits in the dispensaries; and that the attention of the Chancellor of the Exchequer should be drawn to the value of the dispensaries in providing medical relief for women and children, as well as for men. The Attorney-General, who received a deputation from the association, said that there was nothing to prevent friendly societies or insurance committees utilizing these dispensaries, and he thought they would gain rather than lose thereby. The council is at present waiting to see what arrangements are made under the Act with the medical profession, and intends as soon as possible to bring before the Commissioners the position of the dispensaries and the possibilities of their being used for the medical treatment of insured persons, leaving details to be arranged by local Insurance Committees.

The report states that at the end of the year the association had a membership roll of 13,016 "cards," family and single, which was a total increase of 334 over the previous year. The contributions are 6d. a month for a single person, or 4d. in poorer districts, and the highest payment for a man, wife, and all children under 14 years of age is 1s. 10d. a month, or 1s. 4d. in poor districts. The number of qualified medical men who work for the association is 148, and of dental surgeons 20. Each member selects his own doctor, and may be transferred from one to another at any time except during an illness; while consultations by any doctor on the staff are given free. It is claimed that "there is no restriction as to the quality or quantity of the drugs ordered by the medical officers." Midwifery attendance is given at reduced fees, and nursing is free; as to dental treatment, extractions and advice are free, and the charges for mechanical work are at reduced rates. Special hospital and convalescent home treatment and surgical aid are, on the advice of the medical officers, obtained as far as possible. Advantageous terms are also offered to benefit societies and clubs, their members being charged 1s. a quarter, and in return have a choice of the doctors near their homes.

In looking over the particulars given of the separate dispensaries, which number 17 together with 4 medical

clubs, it is noticeable that the Croydon dispensary seems to make a speciality of the treatment of diseases of the ear, throat, and eye. Consultants for these branches are attached to it, and a considerable number of patients are treated. The Soho branch derives its income largely from affiliated clubs, while for the branch at Tottenham there are 19 doctors on the staff and 872 members. The Whitechapel branch is the largest, with 1,862 members; of the Willesden Green branch it is said that the receipts from the 182 members amounted to £93 10s. 8d., that subscriptions from honorary members amounted to £76 17s. 6d., and that the medical staff includes 11 of the doctors of the neighbourhood. The accounts of the association show that the total members' payments, including ordinary contributions, fees for midwifery, dental, and "immediate treatment," as well as payments for bottles, cards, etc., amounted to £5,638, or, including Hospital Saturday Fund payments, £5,963. In addition to these sums there were grants from the council to certain branches that were not self-supporting, and from the Hospital Sunday Fund, donations, and other receipts, making a total income of £7,649. The expenditure account shows that the doctors, midwives, and dentists altogether received £3,462, and dispensers £1,100; drugs, bottles, and dispensary sundries cost £644, and rents, rates, taxes, and the various management expenses and sundries cost £2,030, leaving a balance of about £412. It is not stated how many family cards there are in distinction to single members, so that it is impossible to estimate for how many separate persons each doctor, on the average, is responsible. Moreover, the payments made to doctors are lumped together with the payments to dentists and midwives, the only information being that doctors, dentists, and midwives received £3,462 for 13,016 "cards." It is interesting to note that while treatment, including dentistry and midwifery, cost £3,462, drugs, bottles, and dispensing cost £1,744, which is roughly about half as much as actual treatment. The inclusion of dentistry and midwifery in treatment, however, makes it impossible to compare this with the probable relative cost of treatment and medicines and appliances under the Insurance Act. It seems evident, however, that the amount derived by the dispensary doctors for each person on their lists must be absurdly inadequate.

CREMATION.

ELSEWHERE we give an account of the progress of cremation. The figures show a distinct but slow increase in the number of bodies disposed of in that way in Great Britain, and a much more rapid increase in Germany. As to other countries it is not easy to get exact figures; they are scattered through various more or less inaccessible publications or not published at all. Some of the societies formed to further the movement should make it their business to collect all available statistics and publish them from time to time. This could hardly fail to help in exciting interest in the public mind as to an important matter, which at present it looks upon with repugnance or indifference. This feeling is largely due to ignorance, for although death in itself is not to most people a cheerful subject of contemplation, it is made infinitely worse to the imagination by the thought of the horrors of burial. The public mind needs to be educated on the subject. How is this to be done? Scarcely by the distribution of leaflets or even by the oratory of paid lecturers, as if it were an unpopular Act of Parliament. It can only be done *sensim sine sensu* by the instillation of the hygienic advantages of cremation as the opportunity arises. This private and informal propaganda can usefully be carried on by individual medical practitioners. Although the profession is virtually agreed that cremation is from a sanitary point of view the best method of disposal of the bodies of the dead, the time has not, we think, yet come for what may be called an official utterance on the subject; the public is not yet prepared to respond adequately to the teaching. The diffusion of knowledge on the subject is a necessary preliminary, and as a first step the collection of exact figures showing the position of cremation in all civilized countries should be undertaken.

Man is to a great extent led by example, and we are convinced that the progress of cremation in Germany has been greatly aided by the particulars given in *Die Flamme*. The Cremation Society of Great Britain does all that, with the limited means at its disposal, it can to fulfil the mission which it has undertaken. The Belgian Society issues *La Crémation*, which ought to help the cause. We ourselves have for years past published all the facts within our reach, and have sought to impress the advantages of cremation on the public mind. Parts of these articles have often been quoted by the general press. But newspapers, as a rule, seem to be afraid that their pages will be defiled if they touch the subject. This is not a very dignified attitude on the part of organs which exist for the enlightenment of the public mind. An honourable exception is the *Referee*, in which Mr. G. R. Sims ("Dagonet") is not afraid to force the matter on the attention of his innumerable readers.

The reform is one that is bound to come in time, for already the overcrowding of cemeteries in various places is a danger to the public health, and the purchase of land for the purpose of burial is becoming increasingly difficult, and throws an unnecessary additional burden on the ratepayer. The advocates of cremation have therefore, from every point of view, a right to plead for the active co-operation of the leaders of thought in all countries in hastening the advent of this reform.

The list of persons whose bodies have been cremated at Golder's Green and elsewhere contains the names of several well-known clergymen of different denominations. This fact encourages us to hope that the pulpit may yet be used for the diffusion of knowledge which closely concerns the welfare of the living and can in no way harmfully affect the dead. Cremation, as we have several times shown, is not opposed to any theological dogma, and is accepted in principle even by the Roman Catholic Church, which allows the burning of dead bodies in times of pestilence. It would powerfully aid the acceptance of cremation if some broad-minded preachers who command public attention would lay the theological bogey—for it is nothing else—that stands in the way of reform in the mode of disposal of the dead. It should be insisted upon that nothing can be more reverent than the treatment of a body that is cremated. It is never touched by the hands of those to whom is entrusted the discharge of this last duty, and the ashes are gathered with the utmost care into the receptacle in which they are to remain. When we compare this procedure with the filling of a grave with earth, and with the roughness and disregard of decency often displayed abroad—where we have seen a body thrown out of the coffin into a shallow grave and pressed down, when covered only with a thin layer of earth, by the stamping of the grave-diggers—we can only

wonder that sentiment should still be generally on the side of burial.

Cremation gets rid of all the horrors of decomposition. If these were realized every one would cry out with Hamlet, "How abhorred in my imagination it is! My gorge rises at it." We would speak with all tenderness of the feeling that sees in cremation a kind of outrage on the dead. Some feel that the separation from the loved one they have lost is somehow less complete when the body is laid in the ground than when it is quickly destroyed by fire. But this is, after all, not only a morbid but a selfish sentiment, for it is only for the satisfaction of the survivors. It is surely a greater outrage to the dead to let their bodies rot in the ground than to save them from putrefaction by a flame which in the most literal sense is purifying. It is, we have no doubt, the freedom ensured by cremation from loathsome decay that makes so many artists and men and women of letters choose it instead of burial. By all means let the ashes be buried with all suitable rites, and amidst surroundings likely to soothe the sorrowing heart by their beauty. Cremation would make it possible to continue the custom consecrated by long usage of burying in churches. The state of things found in some old churches when vaults have been opened or excavations have been made has from time to time shown how revolting and dangerous this custom is when bodies are buried in the ordinary way. Some years ago protests were made in the name of hygiene against further burials in Westminster Abbey; and, to judge from letters which appeared in the press, these protests were regarded by some as impertinent and almost sacrilegious. It is with the greatest satisfaction, therefore, that we noted that in the cases of Sir Joseph Hooker and Lord Lister, the offer of interment was made subject to previous cremation. This enlightened action of the Dean will doubtless have a great influence in disabusing people's minds of the notion that there is something in cremation inconsistent with Christianity. We recently met with a curious instance of this prejudice in a review which appeared in that very superior publication, the Literary Supplement of the *Times*. Speaking of a tomb in the Cathedral in Toledo bearing the inscription *Hic jacet pulvis et cinis, et nihil*, the writer said that was a strange sentiment to find expressed in a Christian church. But what more is there besides the decaying remains of the body to be found in any tomb? We think this worth mentioning as it illustrates the state of mind that engenders antagonism to cremation. There is an irrational feeling that there is something more—some spark of the *divina particula aeraï*—which is destroyed by cremation. So grotesque a conception may be left to the occultists; Christianity does not teach that the soul dies with the body, still less that it moulders with it in the grave.

We have laid some stress on the theological objection to cremation because it is the most powerful. The argument that the burning of the body destroys evidence of crime has a certain weight; but this is counterbalanced by the number and stringency of the regulations that must be complied with before permission is granted for the cremation of a body. No precaution can absolutely prevent the possibility of a crime remaining undetected. But it may confidently be affirmed that by the provisions of the Cremation Act of 1902 and the Regulations of 1903 that risk has been reduced to a minimum. Cremation is a far greater protection to the public than the ordinary system of death certification, which, lax as it is in its provisions, is still more laxly carried out in practice.

THE ROYAL SOCIETY OF MEDICINE.

The King has been graciously pleased to promise to open the new house of the Royal Society of Medicine of London. The ceremony will take place at 3.45 p.m. on Tuesday, May 21st, and His Majesty will be accompanied by the Queen. An address will be presented to Their Majesties and presentations made. The new building, which stands at the corner of Wimpole Street and Henrietta Street, with entrances into both, is ready; the work of transferring and arranging the library and completing the furnishing will be fully concluded before May 21st, and the building will, we understand, be opened for the use of Fellows and Members on the following day.

UNDER-PAYMENT OF WOMEN MEDICAL OFFICERS.

The report in the *Bristol Times and Mirror* of April 19th of a meeting of the Health Committee of the city on the previous day affords evidence of the success of the action taken by the Bristol Division of the British Medical Association and the Association of Registered Medical Women in respect of the proposal of the Health Committee to obtain the services of a woman doctor as inspector of midwives and lady health visitors on terms regarded by the profession as unfair and unreasonable. The meeting was held for the purpose of making an appointment to this newly instituted office, but as soon as the proceedings commenced it appeared that protests against the terms of the appointment had been received from both the bodies mentioned, that none of the ladies practising medicine within the area had applied, and that in all only two candidates, both ladies from other towns, had sent in their names. These two ladies, Dr. C. M. Kerby of Fulbourn, Cambridge, and Dr. B. Garvie of Rotherham, were both in attendance, and each in turn was interviewed by the committee. Both ladies, however, indicated that they had just learnt that a warning notice against the appointment had been issued by the British Medical Association, and each expressed her inability to accept any appointment the terms of which were considered improper by the Associations to which she belonged. An endeavour was made to persuade them that the views of these bodies were wrong, and that the hours of duty would really be quite short, but neither budged from the very sound position taken up. The net outcome, therefore, was that the committee decided to reconsider the whole question of the appointment. These two ladies are both to be congratulated on the promptitude with which they made up their minds to withdraw their candidature, and on the resolution they showed in resisting persuasion. They were already entangled in the spider's web, and might well have been gobbled up altogether. That one or the other would have been gobbled up had not both firmly withdrawn from the threshold of the parlour we have no doubt, for we have yet to learn of any medical appointment in which the amount of work exacted is habitually less than that suggested by the official terms of appointment. In this particular case the appointment as represented in the committee's advertisements was a "part-time" office at £100 a year, but the duties as laid down in the form of application were as follows: "To act under the direction of the medical officer of health in supervising the work of the midwives, and of the lady health visitors, and of such other helpers as may be provided by voluntary organizations with the approval of the Health Committee." The work was further particularized by stating the hours on duty. These were "half day's service on three days a week, and office attendance on the other three days." An attempt to obtain the services of a medical woman for such a post in return for £100 a year is, to say the least of it, enterprising, while probably no one but the proverbial marine would accept the suggestion made in committee that the duties only meant ten or twelve hours' work a week.

A PIGMENTARY NOSTRUM.

A SHORT time ago a correspondent in the West of England wrote to us to say that he was familiar with people looking black or purple from ill-suppressed passion, or crimson from nervous blushing, yellow as a guinea from jaundice, white on seeing a ghost, or green from envy, but he had not until lately known "half the people of a town" to pass water of a dark grass-green colour. It was early ascertained that this striking phenomenon followed upon the ingestion of "De Witt's kidney and bladder pills," samples of which appear to have been distributed by the proprietors. With the samples was given a leaflet talking about the thousands of deaths every year from Bright's disease, and suggesting that these pills would counteract the effects of the deadly uric acid poison and keep the kidneys well. The leaflet stated that the pills likewise "assist in regulating the urinary system, and cleanse the kidneys, gently helping them to filter out urineous (*sic*) poisons from which rheumatism arises." The pills "are compounded especially to reach and help diseased kidneys, and with the cause removed there can be no backache and no weak back." "Results," the leaflet says, "are shown after a few doses have been taken. But the pills should be continued for several weeks, especially in severe cases." One result is, as the pamphlet says, "the urine becomes a bluish or greenish color, according to the condition of the urine," and this, we are told, "shows that one of the ingredients, which is an excellent antiseptic, is acting properly." As we subsequently received a similar communication from a different part of England, it seemed worth while to submit the pills to chemical analysis, when it was found that they contained a blue dye agreeing in its characters with methylene blue, which it appears to be; the pills also contained oil of juniper, small quantities of a bitter substance and a tasteless resin, and a good deal of kieselguhr. The methylene blue clings obstinately to the other solid ingredients, so that the bitter substance and resin could not be obtained in a pure state, and showed no characters by which they could be identified. A specimen of urine was examined from one recent case; the patient was a man, aged 52, who said that he had suffered from pain between the shoulders, and slight pain in the loins occasionally, and had felt sleepy and heavy during the day. The pills, he said, were brought round from door to door in small packets containing six, and he took four. When he came under treatment he complained of vague abdominal pains, his temperature was 98° F., and the urine of greenish tint. This green tint would, of course, be accounted for by the excretion of methylene blue. The sample of urine was normal in other respects; it had a specific gravity 1008, a slight acid reaction, and contained no sugar or bile pigments. The methylene blue, whether added for that purpose or not, is certainly calculated to impress the person taking the pills, and to serve as a rather ingenious advertisement of the nostrum. When methylene blue is taken in sufficient doses the faeces also become blue on exposure to air, an observation which would be likely still further to impress the patient.

A NATIONAL HEALTH WEEK.

THE movement for the establishment of a national health week, to which Professor Bostock Hill drew attention by a letter in our issue for March 30th, attains its first fruition next week. The arrangements made by the central committee, of which Professor Bostock Hill, President of the Society of Medical Officers of Health, and Mr. A. J. Martin, President of the Institute of Sanitary Engineers, are respectively chairman and honorary secretary, are to come into operation next Sunday; the proceedings will extend over the six following days. Every endeavour will be made to focus public attention on questions of hygiene and sanitation, personal and domestic. The object is to arouse intelligent interest in health even among the more thoughtless and ignorant members of the community, and to secure increased support for local health authorities and voluntary societies for the promotion of the physical well-being of the population. Representatives of the better known of all such societies are on the committee, and the movement has the support of a large number of public authorities, of members of the medical profession, including medical officers of health, of mayors of metropolitan boroughs and the larger provincial towns, and of clerics. As an example of the steps in view may be quoted some of the arrangements made by the committee which represents the movement in the borough of St. Marylebone. This committee, whose chairman is Dr. Charles Porter, M.O.H., includes Sir Thomas Barlow and Sir Lauder Brunton; it has secured that a great variety of health-aiming enterprises should be thrown open to inspection by the general public on one or other day of the week, ranging from the Middlesex Hospital and the Borough Council Cleansing Station and Baths to the Infant Consultations maintained by the St. Marylebone Health Society and the Mothers' Club in Church Street. Popular lectures accompanied by cinematograph and other lantern demonstrations are to be given on various evenings, the lecturers including Dr. F. M. Sandwith, Dr. Dickinson Berry, Dr. Squire, Dr. Sutherland, and Dr. Wallis (who will deal with the care of the teeth). The St. Marylebone Health Society has also arranged to hold its sixth annual meeting during the same week. The sermons at the principal churches on Sunday will include hygiene in their purview; special health talks will take place at mothers' meetings, girls' clubs, men's meetings, and the boys' brigades in the fourteen or fifteen parishes included in the borough, and a gymnastic display will be given by a working girls' club. The arrangements will, no doubt, vary largely in different areas, but some degree of success for the movement seems certain wherever it has been taken up. As evidence of the sound basis of the movement, and as an augury of the permanence of the position of a national health week among the regular events of each year, it may be noted that it seems to have been agreed between the central and local committees that both sensationalism and controversial topics shall be avoided in making the arrangements.

THE HOSPITAL SHIP "MEDIATOR."

THE Navy Estimates recently issued show that it is expected that the hospital ship *Mediator*, designed by Sir Philip Watts, K.C.B., will be completed during the financial year 1913–14. She is to be built by contract, and the sum to be expended upon her in this financial year (1912–13) is £68,838, including £34,000 for hull, fittings, and equipment, and £30,000 for propelling and other machinery. The details of the cost of completing her are not yet ready. She will be a vessel of 5,000 tons, turbine propelled, and having a speed of between twelve and fifteen knots; she will have a wireless telegraph installation, and a number of boats, motor and others, for the transference of the sick and wounded. From the general wards patients will be transferred by electric lifts to the operating theatres to which preparation rooms will be attached. There will be a laboratory and bacteriological room, an ophthalmic room, a dental room, a padded room ample bath accommodation, a steam laundry with disinfector, an incinerator for soiled dressings, and a mortuary. Isolation wards, capable of dealing simultaneously with three or four types of infectious disease, will be provided. The medical staff in peace will consist of four medical officers and twenty-nine sick-berth men; in war there will be nine medical officers and forty-seven sick-berth men; in addition there will be a staff of cooks and special arrangements for cooking for the sick.

THE CONJOINT BOARD IN ENGLAND.

THE offices of the Conjoint Board of the Royal Colleges of Physicians and Surgeons will be moved to the new Examination Hall, 8 to 11, Queen Square, Bloomsbury, on

Saturday next, from which date all business connected with the Examinations of the Board and the diploma of Fellow and Licence in Dental Surgery of the Royal College of Surgeons will be transacted in the new building.

AUSTRALIAN INSTITUTE OF TROPICAL MEDICINE.

IN this issue is published an advertisement by the Australian Institute of Tropical Medicine inviting applications in connexion with the appointment of three new officers, one to be a laboratory expert capable of taking charge in the absence of the director, the second to be an expert in tropical hygiene and epidemiology, and the third to be a biochemist. This is the outcome of the large increase of endowment recently granted by the Commonwealth Government. Extensive new laboratories are in process of erection at Townsville, Queensland, and special wards have already been equipped in the Townsville Hospital. The first report of the Director, Dr. Anton Breinl, is full of hopeful augury. An Australian diploma of Tropical Medicine is being established simultaneously by the universities of Sydney, Melbourne, and Adelaide, the bulk of the teaching being entrusted to the institute. The affairs of the institute are supervised by a committee, including representatives of the Governments of the Commonweath and of Queensland, and the universities of Sydney, Melbourne, Adelaide, and Brisbane.

DYSENTERY IN FIJI.

IN a report to the London School of Tropical Medicine Dr. P. H. Bahr states that the epidemic dysentery in Fiji is of bacillary origin; bacilli morphologically and culturally identical with Shiga's and Flexner's bacilli were isolated from the stools, and at the necropsies of such cases in 1910. Other bacilli, morphologically similar but giving an atypical reaction with various sugars, were also obtained. No special strains were found to be connected with special clinical types of the disease. The sugar reactions of the bacilli were ultimately, after long subculture, found to be variable and inconstant; the reactions as regards mannite and dextrose, however, remained constant. Clinically, cases of all degrees of severity were met with, but they could be classified into three main types—namely, the mild or catarrhal, the acute or ulcerative, and the toxic or fulminant. In some instances attacks of dysentery carried off patients suffering from chronic wasting diseases, such as tuberculosis. An epidemic of this bacillary dysentery would seem to be an annual occurrence in Suva, the capital of Fiji, the season corresponding with the period of greatest heat and greatest aggregate rainfall, and there is some evidence that house-flies act as spreaders of the disease. As regards treatment, the best results were obtained by the use of a polyvalent anti-dysenteric serum.

THE 250th anniversary of the foundation of the Royal Society is to be commemorated by a series of meetings and entertainments to occupy the week beginning July 15th. A number of foreign visitors will be invited, and the first four days will be spent in London; on Friday, July 19th, visits will be paid to the Universities of Oxford and Cambridge.

THE Surgical Section of the Royal Society of Medicine is arranging a large exhibition of museum specimens of aneurysm, collected from the various metropolitan museums, which will be held on the occasion of the meeting of the Section on Tuesday afternoon, May 14th. Professor Gilbert Barling will subsequently (at 5.30 p.m.) open a debate on the surgical treatment of aneurysm.

THE INSURANCE SCHEME.

STATE SICKNESS INSURANCE COMMITTEE

Sixth Meeting.

THE sixth meeting of the State Sickness Insurance Committee was held on April 18th.

Mr. T. JENNER VERRALL was in the chair, and the members present were: *England and Wales:* Dr. R. M. Beaton (London), Dr. John Brown (Bacup), Dr. T. M. Carter (Westbury-on-Trym), Mr. E. J. Domville (as Chairman of the Public Health Committee), Dr. S. Hodgson (Salford), Dr. R. E. Howell (Middlesbrough), Miss Ivens, M.S. (Liverpool), Dr. Constance E. Long (London), Dr. R. A. Lyster (Winchester), Mr. James Neal (Birmingham), Dr. James Pearse (Trowbridge), Dr. F. M. Pope (Leicester), Dr. E. O. Price (Bangor), Dr. W. Johnson Smyth (Bournemouth), Dr. D. G. Thomson (Thorpe, Norwich), Dr. D. F. Todd (Sunderland), Mr. E. B. Turner (London), Dr. A. H. Williams (Harrow on the Hill), Mr. E. H. Willock (Croydon). *Scotland:* Dr J. Adams (Glasgow), Dr. Bruce Goff (Bothwell), Dr. R. McKenzie Johnston (Edinburgh). *Ireland:* Dr. J. S. Darling (Lurgan). *Ex Officio:* Dr. E. J. Maclean, Chairman of Representative Meetings; Dr. E. Rayner, Treasurer.

Apologies for absence for unavoidable reasons were received from Professor Saundby, President; Dr. J. A. Macdonald, Chairman of Council; Dr. F. W. Kidd (Dublin), Dr. Munro Moir (Inverness), and Mr. D. J. Williams, F.R.C.S. (Llanelly).

We are enabled to publish the following account of the proceedings in anticipation of the preparation and confirmation of the minutes:

NEW MEMBERS OF THE COMMITTEE.

The Committee was authorized by the Representative Meeting to co-opt not more than four additional members; three such members have already been co-opted, and it was resolved to exercise the power to co-opt one more member. Dr. H. F. Oldham, of Morecambe, North Lancashire, was elected.

A letter from Dr. R. J. Johnstone, one of the representatives of Ireland on the State Sickness Insurance Committee, representing the Munster and Ulster Branches, was read notifying his resignation from the Committee, and the Chairman of Representative Meetings undertook to arrange for the election of a representative of those Branches in his place.

MODE AND RATE OF REMUNERATION.

The further consideration of the minutes of the Remuneration Subcommittee, which had not been concluded at the last meeting of the Committee (BRITISH MEDICAL JOURNAL, April 20th, p. 918), was resumed. The recommendation under consideration was the services which were considered to be extras. The Committee considered carefully, and adopted a further list of extras based in general on the suggestions made to the Representative Body.

The Committee resolved to call the attention of the Commissioners to the following points:

Special visits—that is, visits made in response to, and on the same day as, calls received after 10 a.m., or made on Sundays at the desire of the insured person—should be extras.

To the question of the definition of the word "misconduct" occurring in Subsection 14 (4):

Where, under any such rule as aforesaid, payment of sickness or disablement benefit is suspended on the ground that the disease or disablement has been caused by the misconduct of the person claiming the benefit, such person shall not thereby become disentitled to medical benefit,

and to the question of the desirability or otherwise of any of the diseases in the definition being held to be an extra.

To the present procedure of friendly societies in admitting new members without any medical examination and its effect on the arrangements to be made with medical practitioners for attendance and treatment, with a recommendation that there should be a fee for a medical examination of an insured person desirous of joining an approved society.

To the fact that the Association had approved the principle of compensation of medical practitioners in cases where a loss of goodwill, etc., has been proved.

MATERNITY BENEFIT AND OBSTETRIC INSTRUCTION.

The Committee had a conference with the President, Dr. A. Routh, and one of the Honorary Secretaries, Dr. W. W. H. Tate, of the Obstetrical and Gynaecological Section of the Royal Society of Medicine, with reference to the probable effect of the provisions as to maternity benefit contained in the Insurance Act, and in the Model Rules issued by the Insurance Commissioners (BRITISH MEDICAL JOURNAL, SUPPLEMENT, March 16th, p. 316) upon the teaching of clinical midwifery. Dr. Routh stated that the Section had been in communication with the National Insurance Commissioners, England, with reference to the meaning and intention of the Model Rules, and that the Commissioners had suggested an interview between representatives of the Obstetrical and Gynaecological Section of the Royal Society of Medicine and one or more of the Commissioners for the purpose of considering the various aspects of the matter involved. Dr. Routh said that before accepting this invitation the Section desired to learn the views of the State Sickness Insurance Committee.

Dr. Routh pointed out (1) that under the Model Rules a member of an approved society was not entitled to maternity benefit in respect of his wife if she were an inmate of any workhouse, hospital, asylum, convalescent home, or infirmary, supported by any public authority, out of any public funds, or by a charity or voluntary subscriptions, or institution approved for the purposes of sanatorium benefit; (2) that the wife or widow of an insured person in respect of whom maternity benefit was payable must be attended in her confinement either by a duly qualified medical practitioner or by a duly certified midwife, she herself selecting any person with either qualification for the purpose; and (3) that under Section 18 unmarried women, if employees and insured under the Act, could obtain similar maternity benefit under similar conditions. The question which specially interested the Section of the Royal Society of Medicine, which contains among its members almost all the teachers of clinical midwifery in London and the provinces of England, was that the rules appeared to imply that the maternity benefit would not be given to the husband or to any insured woman if the woman were attended in her confinement by a medical student. He said that last year in London alone, within certain definite areas around the general hospitals, 1,150 women were attended in confinements by 400 students under the general supervision of duly qualified medical practitioners. It was contended that if in future the attendance of such students upon these confinements involved the loss to the husband or the woman of maternity benefit, such women would largely be attended by certified midwives and the facilities by which medical students now obtain clinical experience of parturition and the lying-in period would be very largely reduced.

In reply to questions Dr. Routh said that it was estimated that the proportion of wives of insured persons, or women themselves insured, among those so attended would be large. About 2,000 parturient women were received annually as in-patients, and remained on the average about fourteen days. Dr. Routh added that the Council of the Section regarded favourably the following suggestions for meeting the difficulties mentioned:

1. That poor women should be given clearly to understand that if they enter maternity hospitals for their confinement the benefit will be paid to their dependents.

2. That women attended by students and pupil midwives in the extern department of a hospital under the supervision of qualified medical men—that is, the hospital staff—should be regarded as attended by qualified medical men, and should be eligible for maternity benefits.

It was pointed out by members of the Committee that the Commissioners were bound to safeguard the right of the woman herself to select a duly qualified medical practitioner or a duly certified midwife, but generally the Committee were in sympathy with the view of the Section of the Royal Society of Medicine as to attendance by medical students and pupil midwives, and expressed the opinion that an interview with the Commissioners might be useful.

JOINT ADVISORY COMMITTEE.

It was reported that the meeting of the Joint Advisory Committee, summoned for April 26th, had been postponed, and would probably not be held until a fortnight after that date.

The Committee expressed its readiness to meet in conference, immediately before the first meeting of the Advisory Committee, those medical members of the Advisory Committee who had not been nominated by the British Medical Association.

The letter from the Joint Committee of National Insurance Commissioners in reply to that addressed to the Commissioners on April 12th (BRITISH MEDICAL JOURNAL, April 20th, p. 917) was read. The resolution of the State Sickness Insurance Committee at its meeting on March 14th (BRITISH MEDICAL JOURNAL, March 23rd, p. 696), to the effect that the policy of the Committee should be to arrange direct negotiations with the Insurance Commissioners as and when, in the opinion of the Committee, occasion arises, was considered, and it was resolved that at its next meeting the Committee should draw up a further letter to the Insurance Commissioners calling attention to the above statement of policy.

NEXT MEETING.

It was resolved that the next meeting of the Committee should be held on April 25th.

NATIONAL MEDICAL UNION.

Proposed Public Medical Service.

Mr. T. R. WALTENBERG, M.A.Oxon., Honorary Secretary of the Press Committee of the National Medical Union, writes: Allow me to correct a mistake in yours of the 20th, p. 918, where the Chairman of the Subcommittee is reported to have said that "the National Medical Union had in preparation a scheme based upon payment for attendance, for the organization of a Public Medical Service under the control of the profession, for use in the event of the medical benefit under the National Insurance Act being suspended, and added that he understood that the scheme would shortly be submitted for the consideration of the State Sickness Insurance Committee."

The fact is that there are three such schemes before the National Medical Union. So far none of them has satisfied the views of the executive. It is therefore premature to expect one with the imprimatur of the union or some of the executive of that union to be laid before the State Sickness Insurance Committee or any other organization.

Medical Notes in Parliament.

[FROM OUR LOBBY CORRESPONDENT.]

Insurance Act.

The Administration of the National Insurance Act.

ON April 18th, on the motion to get the Speaker out of the chair on the Civil Service Estimates, Mr. Rupert Gwynne moved a resolution expressing general disapproval of the methods adopted and the steps taken to bring into operation Part I of the National Insurance Act, and the opinion that, owing to the delay in establishing the Advisory Committee and framing regulations, in establishing the Insurance Committees and District Committees, and in making arrangements for providing medical benefit and otherwise, the date of the commencement of Part I of the Act ought to be deferred. In reply to a challenge made by Mr. Gwynne early in his speech, the Financial Secretary to the Treasury (Mr. Masterman) said that the whole parliamentary responsibility for any executive action of the Commissioners was accepted by the Chancellor of the Exchequer. Mr. Gwynne contended that this would amount to this: that matters which were not discussed by the House, but left to the Insurance Commissioners to determine, were in fact to be determined by the Chancellor of the Exchequer. Mr. Gwynne protested that attempts had been made to make party capital out of the Act.

The motion was seconded by Sir Philip Magnus, who directed his attention to the question of the arrangement so far made with regard to medical benefit. He said that

he would have the sympathy of many members of the other side of the House in expressing his regret that the Act should have been drafted practically without reference to the members of the medical profession, without whose co-operation it could not possibly work. He referred to the meeting of the Scottish Medical Insurance Council, reported in the SUPPLEMENT of the BRITISH MEDICAL JOURNAL of April 20th, p. 401, and said that the resolutions then adopted practically amounted to this, that the medical profession in Scotland proposed to contract out of the machinery of the Act, because it was impossible to work it. He continued as follows: "It will be remembered that in August last I moved an amendment to the Insurance Bill, with the object of giving effect to some of the cardinal points raised by the medical profession, and regarded by them as essential for securing their co-operation in bringing the Act into operation. The Chancellor of the Exchequer met me with an absolute *non possumus*, and he expected to override the wishes of the whole of the medical profession by Act of Parliament, and they would be compelled to come in under the machinery of the Act; but from that time up to the present moment the medical profession has held out for the granting of these very amendments which I moved in August last, and they have not yet been granted. I venture to say further that if these amendments had then been adopted by the Chancellor of the Exchequer, this Act, so far as its medical benefits go, would have been in operation a long time before now, and we would have had the whole of the medical profession willing to come in, and would give effect to a measure the object of which is to prevent sickness and illness. So far a settlement has not yet been reached with the medical profession on the points by virtue of which they are willing to co-operate. What has been done? Large sums of money have been expended, innumerable committees have been set up, secretaries and clerks and lecturers and typewriters and persons of all descriptions have been appointed at enormous cost to the country, to cure sickness, while the particular persons who are alone able to work this part of the Act are not in co-operation with it at all. At the present moment the rate of remuneration paid to the members of the medical profession has not been settled either in the Act or by the Commissioners. I think it ought to be known that the very actuarial calculations on which the bill is based will probably be found to be entirely inaccurate, because they have proceeded on the assumption that the members of the medical profession will be willing to give medical attention for less sums than they are prepared to accept. I have only recently been informed that a very much larger sum of money than that which has been calculated, amounting to more than hundreds of thousands of pounds, will be required to satisfy the legitimate requirements of the medical profession before this Act can be brought into operation. Perhaps the Financial Secretary to the Treasury will be able to tell us—and the information I am seeking would really be useful to the medical profession—whether the Chancellor of the Exchequer intends to devote a portion of the £6,000,000 surplus which he has at present in his pocket to provide sufficient remuneration for members of the medical profession to enable this Act to come into full operation." Sir Philip Magnus then referred to the correspondence which had passed between the State Sickness Insurance Committee of the British Medical Association and the Insurance Commissioners, and said that the last letter of the Joint Committee of Insurance Commissioners showed that no progress had been made since August towards an arrangement being made between the Commissioners and the members of the medical profession, without whose assistance the Act could not be carried out. He said that when the facts were brought under the notice of the Financial Secretary by questions in the House he took refuge in the statement that even if there was no medical benefit the Insurance Act would come into operation. Continuing, Sir Philip Magnus said: "This is really the most remarkable statement that has ever been put forward, and I should be very glad if the hon. member would inform us what it means. It means nothing less than trying to perform *Hamlet* without the Prince of Denmark. How is it possible to arrange for the prevention of disease and illness unless you have the members of the medical profession working with you? What were we told a few days ago in answer to a question on this point? The answer given to us was that if the medical profession refused to co-operate the Insurance Committees will be enabled to pay to the insured person the sum equivalent to what the medical benefits would cost. Yes, that is true; but how can we ensure that this money collected from the pockets of both workmen and masters and contributed to by the State for the purpose of medical benefit will be used for that purpose? It may be used for any other purpose, and not necessarily for medical benefits."

Several other members spoke, and Mr. Cassel specially dwelt on the uncertainty of the institution of sanatorium and medical benefits.

Mr. Masterman, replying for the Government, said that full sanatorium benefits would not be available immediately the Act was put into operation, but there was no reason why people who could be given benefits between July 15th and January 15th should have those benefits put off. Sanatorium benefits as defined by the Act and interpreted by the most important committee now sitting were of much wider scope than the mere sending of patients to sanatoriums, and before July 15th they would be able to lay before the House a system largely outlined by the Commission which would grow every week as opportunities offered, and would give immediate and direct relief to some of the most unfortunate of the insured persons of which they might be for ever deprived if the Act was put off till January. The hon. member for the University of London had complained of delay in negotiation with the medical profession in regard to medical benefits, but were the Commissioners responsible for that? The first action of the Commissioners was to invite conferences with every class affected by the Act; and every class responded to the invitation except one, the official representative body for the medical profession. Fortunately—for he strongly wanted to see peace—with the British Medical Association wiser and more moderate counsels prevailed, and the Commissioners were only asked to postpone a conference, and now they had nominated members for the Advisory Committee. But so far as the great statutory body representing the medical profession were concerned they thought it their duty to declare that under no circumstances would they discuss questions with the Commissioners, and yet the Commissioners were blamed for delay! The administration of the Act was in the hands of the Insurance Commissioners, and if the statutory representatives of the medical profession realized that their demands could not be granted there was no reason why they should not come and see why they could not be granted. Of course, and necessarily, there was delay, but now that the Advisory Committee had been set up with full representation of the profession, there might be some rational conversation and rational understanding.

The Marquis of Tullibardine was speaking when under the standing orders the discussion was adjourned. It was resumed on Wednesday, April 24th, when Mr. H. W. Foster criticized the delay in appointing the Advisory Committee, and attributed the reluctance of the medical profession to appoint representatives to the manner in which the Chancellor of the Exchequer had referred to the profession. He went on to discuss the position of small societies and the delay in the appointment of Insurance Committees. After speeches by Mr. Lees Smith, Mr. Peel, Mr. G. H. Roberts, and Sir H. Craik, Mr. Masterman replied, dealing with various points in the discussion, but said that he would defer his observations on the position of the medical profession until next week, when the matter was to be raised by a distinct resolution. After other speeches, the closure was carried by 204 to 145, and Mr. Gwynne's amendment was rejected by 205 to 147—a majority of 58.

Insurance Act Sanatoriums.

Mr. Goldman asked, in view of the fact that the National Insurance Act came into operation on July 15th, from which date every insured person who might suffer from consumption was entitled to sanatorium treatment, whether any, and what, provisions were being made to give effect to this part of the Act; whether, pending an arrangement being arrived at with the doctors, a special authority certifying sanatorium patients and treating

them would be created; and, in the event of sufficient beds not being available, what course he proposed to take with regard to the contributions from insured persons in respect of sanatorium treatment.

Mr. Masterman replied and said sanatorium benefit would commence from July 15th, but it would be impossible to give all patients requiring treatment in sanatoriums such treatment until sufficient sanatoriums had been provided. In the event of local Insurance Committees not being constituted by that date, other means would be provided for selecting those who would be recommended for treatment in sanatoriums. Any money necessarily unexpended owing to insufficiency of accommodation at the commencement of the working of the Act would be available for later benefit. The whole subject was being considered by the Committee on Tuberculosis, which would, he understood, report very shortly.

Sanatorium Benefit.

Mr. Hunt asked the Chancellor of the Exchequer whether, in view of the fact that there were about 300,000 people in the United Kingdom suffering from consumption every year, he could say how many consumptive people would have been provided with beds in Government sanatoriums at the end of three years after the National Insurance Act has come into operation.

Mr. Masterman said he had no reason to anticipate that within the period named by the hon. member beds would not have been provided in sanatoriums for all cases for which such treatment was found necessary. Other forms of treatment, either institutional or otherwise, would be provided for other cases according to their respective requirements. He should add that the Act did not contemplate the provision of sanatoriums by the Government, but by the county councils and other local bodies with the assistance of the grant which Parliament had made for the purpose under the conditions laid down in Section 64 of the Act. The grant would be sufficient to provide for all those who needed special sanatorium treatment. Arrangements were under consideration for giving from July 15th onwards to insured persons suffering from tuberculosis who were not treated in sanatoriums such special treatment in other institutions or otherwise as their cases severally required. No announcement, however, as to the precise character of these arrangements could usefully be made pending the consideration of the report of the Tuberculosis Committee, the issue of which was expected within the next few days.

Insurance Committees.

Mr. E. Harvey asked whether the Insurance Committees would be constituted before July 15th.

Mr. Masterman said he was not at present in a position to make any definite statement as to the date of the constitution of local Insurance Committees. If they were not constituted by July 15th special arrangements would be made for the administration of sanatorium benefit, which was the only benefit coming into operation before January next.

Sleeping Sickness.—Dr. Chapple asked the Secretary of State for the Colonies whether his attention had been called to the additional evidence published in the *Annals of Tropical Medicine and Parasitology*, issued by the Liverpool School of Tropical Medicine, in confirmation of the view that game in Nyasaland was a reservoir and *Glossina morsitans* a carrier of the trypanosome of sleeping sickness; and whether he was now prepared to take such steps as would tend to protect human life, domestic animals, and British trade from the consequences of this disease. Mr. Harcourt replied that he was informed that Drs. Kinghorn and Yorke, of the British South African Commission, working in the Luangwa Valley, Northern Rhodesia, had shown satisfactorily that *Glossina morsitans* transmits, in Nature as well as in laboratory experiments, the human trypanosomiasis of that region and that certain wild animals were naturally infected with the human trypanosome. With regard to the first finding it followed that every effort must be made in Nyasaland and Rhodesia to destroy, where it was possible, and elsewhere to avoid this species of tsetse fly. He was advised, however, that the second finding required more examination. The Commission examined ninety-eight wild animals, of which seventy-seven were antelope and eight were pig; it was in these animals, namely, in seven antelope and one pig, that human trypanosomes were found. They did not record any examinations of domestic animals except that of one dog, and it was noteworthy that in this animal also human trypanosomes were found. But it had been shown elsewhere that cattle and other domestic animals might harbour human trypanosomes without detriment to health. Consequently, it was probable that domestic animals in Rhodesia (and equally Nyasaland) which were subject to the bites of *Glossina morsitans*, also harboured the human trypanosome. This required investigation, and if they were found to do so it would greatly complicate the problem, because it was out of the question to decree the destruction of all domestic animals in Nyasaland. He assumed that his hon. friend wished to kill off all or a great number of the large wild animals in Nyasaland, and that he advocated this on one of two assumptions: either (*a*) that the tsetse fly could not exist without them, and therefore would die out when they disappeared; or (*b*) that the large wild animals form the reservoir of the virus which the tsetse transferred to men. As regards (*a*), there was much contrary evidence; and as regards (*b*), there was probability that the domestic animals were serving equally as a reservoir. It might well happen, then, that as a result of exterminating or greatly reducing the game, the tsetse fly, unable to obtain blood from these animals, would attack man and the domestic animals to a yet greater extent than it did at present, and that if, as was probable, these domestic animals harboured the human trypanosome, human beings would become infected in increased proportion owing to close association with their flocks and herds. He did not maintain that this would happen, but he was advised that it undoubtedly might, and such a possibility should call a pause before decisive action was taken on the evidence at present available. An attempt made in Nyasaland to get the game in a certain area killed off was after twelve months unsuccessful, though the natives were encouraged to shoot. It would be well to bring such an experiment to a successful conclusion before deciding to attempt the same thing on a large scale. The matter was, of course, urgent, and it was of vital importance to Nyasaland; but he did not think that anything would be lost by waiting a few months for a report from the Royal Society's Commission, which was investigating the connexion between sleeping sickness and the African fauna in all its aspects. No fresh cases of infection, either in Nyasaland or Rhodesia, had been reported during the present year.

The Inebriates Bill.—Mr. Ellis Griffith, in moving the second reading on Monday last, said that the main provisions of this bill were founded on the recommendations of the Departmental Committee which reported in 1908.[1] There were two methods of dealing with the people who came under the Act. If a man or woman could be induced voluntarily to enter a retreat he or she could be subjected to restraining and reforming influences, but it was hardly necessary to say in a great number of cases people would not submit themselves to voluntary treatment. Inebriates who had committed offences against the law could in certain cases be sent to reformatories. There were two classes of these inebriates. There were, first, those who had been convicted on indictment of offences punishable by imprisonment or penal servitude if drunkenness was a contributing cause and if the offender was found by the court to be an habitual drunkard. This was under Section 1 of the Act, but many difficulties had arisen in putting the section into operation, and during the last twelve years only 600 persons had been dealt with under it. The second class consisted of people summarily convicted of drunken conduct four times within twelve months. Only about 3,500 persons had been dealt with under that description during the past twelve years. The inadequacy of the present provisions was amply borne out by the fact that during the last twelve years there had been 2,000,000 summary convictions. Less than 1.5 per cent. of the persons convicted of drunkenness were sent to reformatories. The first part of this bill applied to inebriates who had committed no offence, and the second part dealt with

[1] BRITISH MEDICAL JOURNAL, March 30th, 1912, p. 737.

criminal inebriates. Under the first part it was proposed to apply the principle of compulsory detention in certain circumstances and subject to certain safeguards to inebriates not guilty of any offence. That was the new principle introduced by the bill, and the proposal was based on the report of three Departmental Committees. It was, no doubt, a strong step to take, but the Government were convinced that it was urgently needed. The only alternative to interfering with the particular inebriate was to permit the inebriate to interfere with other people. The bill provided that the power of committal should only be exercised by a county court judge, a police or stipendiary magistrate, or a specially-appointed justice, and the exercise of this power was subject to very powerful restrictions. Provision was made that before an inebriate could be committed a trial should be made of voluntary submission to restriction, either by way of a statutory pledge taken before a justice or a voluntary submission to the care of a guardian. It was only when the inebriate refused the two methods of voluntary submission, or when they failed, that a compulsory committal might be put in force; and under a compulsory committal a person might be either committed to a reformatory or to the care of a guardian. In many cases, no doubt, the adoption of the latter method would avoid reformatory treatment. With regard to the second class of inebriates, those who had been guilty of offences under the Act of 1898, it was necessary to prove that the offender was either an habitual drunkard or had been convicted four times in twelve months. It was proposed in the bill to get rid of both those provisions and to empower the Court to commit to a reformatory any offender brought within the definition contained in one of the clauses of the bill. The practice had sprung up of making three years both the maximum and the minimum period of committal to a reformatory. It was now proposed to substitute a maximum of six months for the first committal and a period of not less than one or more than three years on the second or subsequent committal. The bill also provided for a period of probation after release from a term of detention. The law had been inadequate, for there had been no compulsion to provide accommodation. That obligation would now be imposed upon local authorities, and the Government proposed to help the work by a Treasury grant towards the cost of maintenance. One feature which was new was the definition of intoxicant as including "any intoxicating liquor, and any sedative, narcotic, or stimulant drug or preparation." He supposed that would include morphine, cocaine, and similar drugs. He hoped the House would regard the bill as non-controversial.

Mr. C. Bathurst expressed sympathy with the principle and intention of the bill. Sir F. Banbury moved the rejection of the measure but he found no seconder. Mr. Roberts, Mr. Pollock, Mr. Munro Ferguson, and Mr. Joynson Hicks continued the discussion, which was interrupted for private business. The second reading was therefore postponed but will come on at the first opportunity.

Mental Defect Bill.—This bill proposes to amend the law relating to mentally defective and epileptic persons. It was presented on April 15th by Mr. Hills, supported by Mr. Acland Allan, Mr. Dickinson, Mr. Godfrey Locker-Lampson, Sir Alfred Mond, and Mr. Pollock, and is put down to be read a second time on Monday, April 29th.

Vaccination (Royal Navy).—Mr. Bentham asked the First Lord of the Admiralty whether he was aware that although Alfred C. East, able seaman, of His Majesty's ship *Natal*, had his right to object to vaccination confirmed by the Admiralty in June, 1911, and his privileges as a very good conduct man restored to him on the way to India, whilst escorting the *Medina*, East was told by the captain that he would have to be vaccinated, and that East referred to the decision of the Lords of the Admiralty; whether he was aware that the captain refused to recognize this, and also declined to allow East to see the commander of the escorting squadron; that East was not allowed on shore for recreation and to attend divine service; and that on the way home the captain applied for East's discharge, but this was refused by the admiral in consequence of the Admiralty's decision about the case; and whether he would inform the captain of the *Natal* that he had no right to curtail East's privileges solely because he objected to be revaccinated. Mr. Churchill replied that no report had been received on the subject, and it could not therefore be stated whether the facts, as given in the question, were correct in all their details. It would appear that the man's leave was not stopped as a punishment, but as a precaution for the safety of others. No attempt had been made to force him to be revaccinated, and no such attempt would be made, but, as a necessary consequence of the exercise of his discretion in the matter, his movements might have to be restricted, particularly in foreign ports where small-pox was prevalent.

Suffragettes and Forcible Feeding.—Mr. Fletcher asked the Home Secretary whether he would reconsider his view as to the necessity of the forcible feeding of prisoners. Mr. McKenna said that the forcible feeding of prisoners was a matter of necessary medical treatment carried out in accordance with the law as laid down by the High Court. If the hon. member could suggest any better means for preserving the life of a prisoner who refused to take food in the ordinary way he would be most happy to consider it; but it must be plain to him that it was impossible to allow any prisoner to determine the length of his own sentence by setting him at liberty if he chooses to refuse food for a few days. Asked if he could not give fuller discretion to the medical officers, Mr. McKenna said they had a careful report in every case from the medical officer as to whether a patient was in a suitable state of health to be forcibly fed. Whenever a medical officer reported that a prisoner was not in a suitable state the prisoner was at once discharged. That applied to criminals of all classes. Mr. Lansbury then asked the Home Secretary to state the number of suffragist prisoners, if any, now being forcibly fed, and whether he could make any further statement as to the application of Rule 243A to those prisoners. Mr. McKenna replied that the number who had to be fed by artificial means varied from day to day, but, including all the prisons, it was now, he understood, 17. In view of representations made by the Chairman of the London Quarter Sessions, he had decided to extend Rule 243A to all the suffragist prisoners convicted at Quarter Sessions. The privileges given under the rule would be modified in one or two particulars. It would not be possible to allow the large number of suffragists now in prison to have their meals sent in from outside indiscriminately, but as many of them were old or in poor health, their ordinary diet would be modified to suit their needs by the prison medical officer, and subject to his approval each prisoner would be allowed to have sent in by their friends, if they so desired, one parcel of food weekly on a specified day. They would be employed only on the lighter forms of prison labour, and they would, if they behaved well, have monthly visits and fortnightly letters. Strictly speaking, he had no power to extend the privileges to the hard-labour prisoners; but, as those now in prison were all approaching the termination of their sentences, he felt he would not be guilty of any serious irregularity if he allowed them to be treated in the same way as the others. This treatment would apply to suffragist prisoners wherever they might be.

A QUARTERLY court of the directors of the Society for Relief of Widows and Orphans of Medical Men was held on April 10th, the Right Hon. Sir Thomas Boor Crosby, Lord Mayor, one of the Vice-Presidents of the society, in the chair. Two gentlemen were elected members of the society. By the kind invitation of the Lord Mayor, the annual general meeting of the society will be held at the Mansion House on Wednesday, May 15th, at 5 p.m. The invested funds of the society now amount to £101,600. Relief is only granted to the widows and orphans of deceased members, and since the last court five letters had been received from widows of medical men asking for relief which had to be refused as their husbands had not been members. Membership is open to any registered medical practitioner who at the time of his election is resident within a twenty-mile radius of Charing Cross. The annual subscription is two guineas. Life membership may be obtained on special terms varying with the age of the applicant. Proposal forms and full particulars may be obtained from the Secretary at the offices of the society, 11, Chandos Street, Cavendish Square, W.

Ireland.

[FROM OUR SPECIAL CORRESPONDENTS.]

NATIONAL INSURANCE SCHEME.

Advisory Committee for Ireland.

THE Advisory Committee to the National Health Insurance Commission (Ireland) consists of a total of forty-eight members; of these, five are doctors: J. S. Darling of Lurgan, T. Donnelly of Dublin, and T. B. Costello of Tuam, nominated by the Conjoint Committee of the British Medical Association and Irish Medical Association, and the Right Hon. M. T. Cox of Dublin, and P. T. O'Sullivan of University College, Cork, nominated by the Commissioners. Miss Ramsden, Lady Superintendent of the Rotunda Hospital, and Miss Hannan, Matron of the Mater Infirmorum Hospital, Belfast, have also been nominated by the Commissioners as persons representative of insured interests.

Consumptive Workmen.

It has been pointed out in the daily papers that the consumptive workman who is sent to a sanatorium will not have 10s. a week provided for his family while he is being cured, as was stated by the Chancellor of the Exchequer, at any rate in the early years of the working of the Act. The reason is that no approved society would take a consumptive as a member, and therefore he will be a Post Office contributor, in which case it would take him eight years to provide the sum of 10s. a week for twenty-six weeks.

WOMEN'S NATIONAL HEALTH ASSOCIATION.

The fifth annual meeting of the general council of the Women's National Health Association was held on April 18th, 19th, and 20th in the theatre of the Royal Dublin Society. The president, the Countess of Aberdeen, in submitting the report, spoke of the great success of Ui Breasail, and thanked all those who had worked for it. Speaking of the Insurance Act, Her Excellency said that there was a provision whereby approved societies could make donations for the purpose of maintaining district nurses, and also that there was a rule providing that approved societies might appoint persons to visit and nurse their members. The Slainte Insurance Society did not intend to have branches, as it was more economical to work with one head office and with officers and visitors about the country as they were required. It had now submitted to the Insurance Commissioners a rule that the society should, wherever possible, appoint duly qualified nurses to visit insured members. The Women's National Health Association and the Slainte Insurance Society could work in friendly co-operation, and when one of the branches of the Health Association found it difficult to maintain its district nurse, if there were a sufficient number of insured members in that district the Slainte Society would be able to appoint the same nurse as its visitor there. Lady Aberdeen also spoke of the recent formation of the Irish Goat Society and the good it might be expected to do in improving the milk supply of the poor.

At the annual meeting of the Rathgar and Terenure Branch of this Association it was stated that arrangements had been made for a dentist to visit the Terenure Dispensary once a fortnight to inspect, extract, and fill the teeth of the children of the district. Lady Aberdeen said that though the death-rate from tuberculosis had fallen in Rathmines and Rathgar it had risen in Crumlin, and the infantile mortality for the whole district was high; it might therefore be necessary to start another baby's club.

DISTRICT LUNATIC ASYLUMS.

A conference of the committees of management of district lunatic asylums was held in Dublin last week to consider the deficiency in payment of the 4s. grant in aid for pauper lunatics. It was explained that the grant was originally given in order to secure beyond all doubt adequate provision for the exceptional requirements of the insane poor. It was an addition to the sum raised in asylum districts, and was in no sense intended to take the place of such local charges. For a considerable number of years it was continued, and the assurance of its certain receipt fixed the standard of necessary asylum maintenance. It was first granted at a period when the cost of living was very much less than at present, when the labour market was cheaper, when acute lunatics had but lately passed from gaol cells to more humane treatment. All this has changed. The cost of living has increased the rate of salaries, and wages are higher in every class of service, and the asylums have become mental hospitals appreciated by the public. The result of all this is that much more has to be expended on lunatics, and there are many more lunatics under the care of district asylums, the increase in cost is thus two-fold. This amount is now still further intensified locally by the decline of the 4s. grant which entails an enormous increased local taxation. Till the passing of the Local Government (Ireland) Act, 1898, this grant, which had hitherto been paid out of the Consolidated Fund, was charged on the local taxation account, the shrinkage of which has resulted in this deficit. The Act requires that the asylums shall be "well managed," and in good order and condition. The conference was called, therefore, to protest most strongly against this result of an Act which, while it threw the control of asylums more directly into the hands of county authorities, at the same time tranferred the source of income from a fixed to a fluctuating fund, from a Consolidated Fund to the local taxation account, which latter depends on special trade conditions in Ireland. The following resolution was passed:

> This conference of the Committees of Management of District Lunatic Asylums, representative of those who are immediately responsible for the proper provision and adequate care and treatment of the insane poor in Ireland, and, we, the standing authority in the lunacy services of the country, and familiar with the requirements of the districts, are of opinion that in the present circumstances the full 4s. in aid being a measure of State contribution, due to supplement local lunacy charges, the same should be at once provided to make up the deficiencies of Irish local taxation account in respect of the grants to Irish lunatic asylums. We are also of opinion that this grant should be placed on a non-fluctuating basis, on the terms set out in the report of the Executive Committee of the Irish County Council's General Council for the year 1910; and, that in any arrangement that may be made at any future time in connexion with the finances of asylums, the grant shall be earmarked for its special purposes. We hereby call on the Government to make good the deficiency that has already accrued, and to secure in the future the full payment of the grant to enable us to continue to discharge in a manner beneficial to the insane poor and satisfactory to the public the responsibilities with which we are charged.

A small committee was appointed to act in the matter.

BALLINASLOE ASYLUM.

Exception has been taken by the local medical men in Ballinasloe to the action of one of the doctors of the Ballinasloe Lunatic Asylum, who has, they say, engaged in private practice in the district. Some time ago these doctors wrote to the committee of the asylum drawing their attention to this. This letter was marked "read." At the last meeting of the Asylum Committee a further letter from the doctors was read, in which, though mentioning the name of the offending doctor, they said they still wished merely to object to the principle of a whole-time medical officer in the public service engaging in private practice, consultative or otherwise. The doctor in question said that he had never taken any fees for private practice, and the Medical Superintendent, when asked, said that he was a most efficient officer. As no specific charge had been made, it was decided to merely mark the letter "read." There is no doubt that only in very exceptional circumstances is it advisable that a whole-time medical officer of an asylum should undertake private practice beyond consultation in cases of mental disease or in cases of emergency.

CORK DISTRICT LUNATIC ASYLUM.

At the monthly meeting of the Committee of Management of the Cork District Lunatic Asylum, held on April 16th, the question of the appointment of two resident Roman Catholic chaplains came before the meeting. A subcommittee had been directed to consider the question and report on salary, accommodation, etc. This committee recommended that the salary in each instance should be £150 per annum with furnished residence, fuel, light, vegetables, milk, bread, and washing, valued at £80 per annum. The resident medical superintendent having reported that no buildings were available for the proposed chaplains' residences, the subcommittee inspected the grounds for an available site and selected the eastern part

of the garden attached to the resident medical superintendent's residence. To this the resident medical superintendent objected, holding that the garden was his perquisite as much as his salary, but it was stated by the clerk that the word "garden" only meant a supply of fresh fruit and vegetables for his household. The committee decided on the site and gave orders to invite applications from architects for the work of preparing plans and estimates for the residences. The appointment of resident chaplains is not usual in asylums in Ireland, and hitherto the Cork Asylum has been attended by visiting chaplains, one each for the various churches.

Tuberculosis in Asylums.

Dr. O'Neill, resident medical superintendent of Limerick Asylum, in giving his annual report to the governors, reported 52 deaths for the year, and added that 21 of the deaths were due to tuberculous disease. Having referred to the close connexion existing between insanity and tuberculosis, as pointed out in previous reports, Dr. O'Neill says:

> It is not an uncommon occurrence to find patients developing tuberculous symptoms without having any early signs or complaining of feeling unwell until they suddenly break down and the disease runs a short course. "The remedy is easy—the erection of a small but inexpensive detached hospital on the highest available site, with a verandah running all round, and having a southern aspect, for the treatment of all suspicious cases. This is the surest way of checking the source of asylum mortality." During the last twenty years no fewer than 6,883 inmates of Irish asylums have died from this cause.

Queen Victoria's Jubilee Institute for Nurses.

A conference of representatives of the affiliated associations in Ireland was held last week in the Hall of the Royal College of Physicians, Dublin, with a view to considering the establishment of an Irish committee. Great difficulty has been found by the executive committee in London in dealing with the work in Ireland, owing to the lack of knowledge and information of the conditions in Ireland, as it was impossible to get any body from Ireland to attend the meetings of the committee in London regularly. The original proposal was to appoint an Irish committee, but an amendment was carried to refer the question to the affiliated associations throughout the country. Ireland, it was said, contributed £25,000 to the fund, which was a larger contribution in proportion to her taxable capacity and population than that of Great Britain. If an Irish Executive Committee was formed, one of the first questions which would arise would be the amount that Ireland contributed.

Scotland.

[FROM OUR SPECIAL CORRESPONDENTS.]

Tuberculous School Children.

The Scottish Office has issued a circular to the school boards of Scotland stating that a sum of £7,500 has been assigned for the purpose of medical treatment of school children in Scotland. The expenditure of school boards on medical inspection under Section 4 of the Education (Scotland) Act, 1908, is being aided by grants under Section 17 (6). The further grant now available is to be applied mainly for the medical treatment of necessitous children, in terms of Section 6. The department has under consideration the question of how this grant can be most equitably and most usefully distributed, and is at the same time prepared to consider the question of making grants in aid of open-air schools for children suffering from tuberculosis or other ailments requiring open-air treatment, or in aid of any similar arrangements for improving the health of school children. The Corporation of Glasgow has adopted the recommendations of the Subcommittee on Tuberculosis, as follows:

1. That a home be provided in the vicinity of the city for the accommodation meantime of 50 children, the ground attached to it to be sufficient for accommodating 250.
2. That the approval of the Local Government Board for Scotland be obtained therefor, in terms of the Public Health (Scotland) Act, 1897, and the National Insurance Act, 1911.
3. That the Town Clerk be instructed to make application to the said Local Government Board for a grant towards the cost thereof out of the fund provided under the National Insurance Act, 1911, for the erection of sanatoriums and similar institutions.
4. That, in the event of these recommendations being approved, it be remitted back to this subcommittee to take all necessary steps to provide the home.

Friendly Society Medical Appointments in Dunfermline.

At a meeting of the medical men in Dunfermline, held last November, it was unanimously agreed that each should resign any appointment held by him under a friendly society as from March 31st, 1912. At the same time, the conditions upon which the medical men would be willing to attend by contract members of a friendly society were laid down. Each medical man in the town accordingly handed in his resignation of any friendly society appointment he held, at the same time notifying his willingness to undertake contract work on the terms specified. The societies held joint conferences and appointed a joint committee. This committee met the medical men, who in the discussion which ensued showed that they were determined to adhere to the terms laid down. The Joint Committee then sought to engage one or more medical men from elsewhere to undertake contract work at lower terms than those offered by the local medical men. About the middle of March the officials of the societies again approached the doctors in order to ascertain whether they would agree to do friendly society work if the friendly societies made themselves responsible for paying 1s. 6d. a visit or consultation. After further consideration the matter was finally arranged on the following conditions, all the doctors and all the friendly societies in the town being parties to the agreement:

1. Every member of the friendly society who wished to make provision for medical attendance to pay 6s. per annum. The amount thus collected to be held by the society for the purpose of paying the doctor's bills at the rate of 1s. 6d. per visit or consultation. Should the sum total of doctor's accounts exceed the amount collected, they would be reduced in proportion to the deficit; should there be a surplus, such surplus would be divided between the doctors in proportion to their accounts.
2. Every member of a friendly society who contributed under this scheme to have free choice of doctor at any time.
3. Attendance under this scheme not to include medicine, and all night visits, operations, etc., to be paid for as extras by the individual members.
4. Any member of a friendly society who already contributes at his place of employment for a doctor to have the option of remaining outside the scheme.

The medical men considered that this arrangement would place friendly society work on the most satisfactory basis, as the contract would now be an individual one between doctor and patient, the society guaranteeing payment of the account. Hence, they felt that it would be to the advantage of both patient and doctor to meet the societies by limiting their liability to 6s. per member, especially as it was made quite clear that the arrangement was to be subject to revision at the end of the year.

England and Wales.

[FROM OUR SPECIAL CORRESPONDENTS.]

WEST YORKSHIRE.

The New Bradford Infirmary.

We have received the following letter:

Will you allow me to amplify a statement made by your special correspondent on page 920 of the JOURNAL of April 20th. Referring to the above, he writes: "The committee now suggests a modified design for a complete hospital with 260 beds, costing £180,000." This statement has already been made in another place, and has not unnaturally provoked criticism, on the ground that this total works out at £700 a bed. While it is in one sense true, I think it is due to our architect, Mr. Pite, to point out that it produces an entirely erroneous conception of the policy which the committee are suggesting under his guidance.

At the outset the committee had two objects in view: First, the provision of a comprehensive scheme sufficient for the needs of Bradford for many years to come; secondly, the arrangement of the scheme in such a way that it could be carried out step by step, so that it could be gradually extended as the needs of the district required.

To meet these objects, therefore, the committee asked for a design for a hospital with 400 beds, which would also allow of another 100 beds being added. All administration buildings, out-patient departments, nursing home, offices, etc., were to be arranged at the outset so that they would serve the complete scheme in the future without any reconstruction or material alteration. Mr. Pite met these conditions with much ability, and has provided a scheme which, when carried to its completion, will cost approximately £500 a bed.

For the immediate future, however, Bradford urgently requires bed accommodation for 250 patients. The committee, therefore, suggest that the plans of Mr. Pite for all administrative buildings, and all departments other than wards, be carried out at the outset. Unless the Insurance Act modifies hospital out-patient departments, this part of the scheme can be roughly estimated at £130,000. For the present they suggest building five ward blocks also, at a cost of £50,000, thus providing accommodation for 260 patients to begin with. By adopting this course it will be possible to add one ward block after another in the future, without tampering in any way with the main essential features of the scheme, until the whole 500 beds has been provided. Each ward block for fifty-two patients will cost rather less than £10,000, and there will be no pulling down and reconstructing of the central buildings. Surely such a scheme must commend itself to every practical individual. While it demands of the present generation to provide the nucleus of a hospital such as every large city should possess, it leaves succeeding generations to add any additional ward accommodation they may require.

It is obvious, therefore, that the committee do not merely suggest "a hospital of 260 beds costing £180,000." They suggest the provision of all the essentials of a large hospital at a cost of £130,000, *plus* ward accommodation for 260 patients at a cost of £50,000 to begin with. The total of £180,000 includes far more than the statement conveys to the casual reader.

I have used the figures given by your correspondent in order to avoid any confusion. It is too early to give definite estimates for the various sections of such a large undertaking. As a matter of fact, however, the committee have good grounds to believe that the figures quoted are likely to prove in excess of the ultimate cost.

I am, etc.,

J. BASIL HALL,

Chairman of the Building Committee.

Bradford, April 20th.

Correspondence.

THE NEED FOR PRACTICAL MEDICAL SUPERVISION IN ARTIFICIAL INFANT FEEDING.

SIR,—I have read with interest Dr. Verley's article entitled Observations on an Infant Fed with Barley Water and Cow's Milk in your issue of April 13th (p. 831), and I should like to add a few remarks in support of his concluding paragraph:

> It must be a great saving in money to poor people who are unable to breast-feed their infants if they can rely on cow's milk, either pure or manipulated in some simple manner, instead of experimenting with this, that, or the other proprietary food, at the least excuse, and to the probable detriment of the infant.

I think that this is very true. The cost of the artificial feeding of an infant is a considerable burden even to the average man, let alone the poor one, and it is largely increased by the use of patent foods. It is not the business of the medical profession to prevent people wasting money, but I think that one is justified in pointing out to the public that the occasional advice of a physician in the rearing of an infant is in the long run more economical and more beneficial than improperly conducted artificial feeding, especially with the superadded cost of patent foods. The alluring advertisements of proprietary infant foods will only too readily induce the public to try them ("experiment with them at the least excuse," as Dr. Verley says), possibly in preference to seeking medical advice, and probably owing to an ignorant impression that they form an adequate or superior alternative.

I also believe that the bulk of infant feeding is conducted without medical advice at all, either on account of the expense or because women foolishly disregard their doctor's advice after his attendance at the birth has ceased. They subsequently rear the infant with what scraps of information (often inaccurate) which can be gleaned from friends or from the advertisements of the patent foods in newspapers and periodicals. The medical student is thoroughly educated in the scientific principles of infant feeding, and when he is in a position to put his knowledge into practice, he finds himself "not wanted" because he can be "done without."

Dr. Verley, however, does not suggest a remedy for this unfortunate state of affairs. The difficulty appears to lie in the selection of the proper persons to deal with the matter, to take the lead, and to be responsible for its conduct. The individual practitioner has not the opportunity of dealing with the community as a whole, and I venture to suggest that the best way out of the difficulty would be for the medical officers of health to invite the opinions of the practitioners in their respective districts as to whether printed information could not be sent on notification of birth to every woman who has not been attended by a medical man. The medical officers of health naturally dislike interfering with patients of practitioners, but they might co-operate with them in such an important cause. In some districts I believe that steps have been taken in this direction, but they might be extended with advantage, for it appears to me that the question of infant feeding is of great importance, not only to the individual but also to the nation.—I am, etc.,

London, S.W., April 23rd. J. W. CROPPER.

STERILIZATION OF THE SKIN WITH IODINE.

SIR,—I am obliged to Mr. J. L. Lionel Stretton for pointing out an error in my letter on the above subject, which appeared in your issue of February 24th, p. 465. All I meant to say was that the method of sterilizing the skin with iodine was first introduced by Antonio Grossich, and that his method it was that had been modified by different surgeons. Since writing my first letter, I have used my solution of iodine in petrol for sterilizing my hands and the skin of patients in operations for the radical cure of hernia, hydrocele, fibroid tumour, and an elephantoid scrotum (weight 8 lb.), all of which healed by first intention, leaving a beautiful scar in each case. In these cases, I sterilized my hands and the skin area by simply rubbing them for a few seconds with a sponge soaked in the solution a few minutes before commencing the operation, without any preliminary washing.

I have also used a weaker solution of iodine in petrol for dressing wound cavities, ulcers, sinuses, etc., by packing them with gauze squeezed out of the solution, and the results were very encouraging.—I am, etc.,

Colombo, Ceylon, March 28th. I. DAVID.

POTASSIUM CYANIDE AS A LARVICIDE.

SIR,—In your issue of September 23rd, 1911, p. 712, it was suggested by Sir Ronald Ross and Mr. E. S. Edie that potassium cyanide should be given a trial as a larvicide in the field.

The following are the results of my experiments with the drug on anopheline larvae, chiefly *M. barbirostris* and *N. rossii*:

In laboratory—
1 in 300,000, no effect.
1 in 150,000, no effect.
1 in 75,000, larvae destroyed in twelve hours.

When used in stagnant pools the results obtained were variable. The highest dilution that had any effect was 1 in 50,000, and some pools required as much as 1 in 35,000. A solution of 1 in 37,500—that is, eight times the strength recommended—was required for most pools.—I am, etc.,

S. T. GUNASEKARA,
Superintendent, Antimalarial Campaign.

Kurunegala, Ceylon, March 20th.

HOME RULE AND THE MEDICAL PROFESSION.

SIR,—Will Home Rule affect the medical profession?

It seems worth inquiring whether any steps should be taken to safeguard the rights of the profession in the bill now before Parliament. So far as I know, the measure will do nothing to adversely affect the profession. Of course, an Irish Parliament can create new universities or colleges, and can enlarge or diminish the rights of existing

ones. It can refuse to recognize the General Medical Council, and can repudiate any but Irish diplomas. On the other hand, Britain could retaliate on the same lines, and Ireland would probably be the loser if the account were balanced.

From the Irish point of view, it would seem desirable that the recognition of any additional Irish diplomas (that is, diplomas not at present on the list of those recognized by the General Medical Council) should be provided for. For example, should the licentiates of the Irish Apothecaries' Hall be styled (in virtue of an additional charter to the Hall from an Irish Parliament), say, "Licentiates in Medicine and Surgery, Dublin," powers should be available whereby the General Medical Council would be compelled to register them under that designation, and in like manner if a new qualification, such as M.R.C.S.I., were instituted.—I am, etc.,

J. C. McWALTER, M.A., LL.B., D.P.H.

Dublin, April 22nd.

THE LIBERAL PROFESSIONS.

SIR,—The letter by Dr. Arthur Todd-White (p. 865) states in a most concise way the reasons why the public does not think more of the members of the medical profession. We are collectively the most jealous body of men. The general practitioner who is a great success is the most ready target for all sorts of innuendoes by the less fortunate members, and the public readily see the petty ways of some of us. I almost with fear and trembling state that many doctors' wives, in their almost uncontrolled desire to obtain patients for their husbands, "give the profession away."

Until it becomes a matter of honour under no circumstances to allow any medical man to be spoken of in a disparaging way in our presence, and wives to be seen and not heard, the public will consider as they do now—that we are a species of commercial traveller, desirous of thrusting our own particular wares upon them, often at the expense of our brother practitioner.—I am, etc.,

Dorchester, April 15th. W. BURROUGH COSENS.

THE BRITISH MEDICAL BENEVOLENT FUND.

SIR,—It may interest Dr. Latimer, whose letter under the above title appears in your current issue, to know that an example he might be able to follow has been set in Stepney by Dr. and Mrs. Graham Grant. Assisted by a committee of the wives of the local medical men a concert was given in the Stepney Central Hall last Thursday evening, and a sum of £50 handed to the Fund.

I enclose a copy of the programme, which was made a source of revenue by means of jocular advertisements, for which money was obtained from the firms mentioned therein. All the printing expenses were covered by the sale of these programmes.—I am, etc.,

London, E., April 23rd. FREDERICK SPURR.

SIR THOMAS BROWNE AND WITCHES.

SIR,—In *Notes and Queries* for March 23rd Mr. Malcolm Letts presents a well-considered refutation of the tradition that Sir Thomas Browne, by his evidence, caused the death of two harmless women who were convicted of witchcraft at Bury St. Edmunds in 1682.

Mr. Letts has found (1) that this story, which is to be found in every biography of Sir Thomas Browne, depends entirely upon the unsupported statement of one author, a Mr. Hutchinson, who, in 1720, wrote a book upon witchcraft; (2) that there is no evidence that Sir Thomas Browne was in Bury at the time of the trial; and (3) that he is not even referred to in the official report of the case.

It seems to me that Mr. Letts deserves our warmest thanks for rescuing from an unmerited stigma the fair fame of one of the most brilliant members of the profession.—I am, etc.,

London, W., April 14th. S. D. CLIPPINGDALE.

THE NEW CELL PROLIFERANT.

WE have received a further letter from Dr. Charles Walker, who states that, following Mr. H. C. Ross's "technics," he has produced appearances in leucocytes which correspond in detail with the illustrations and descriptions in Mr. Ross's book. The point at issue, which can hardly be settled by further correspondence in these columns, is that Mr. Ross attributes these appearances to mitotic or indirect cell division, while Dr. Walker looks upon them as corresponding with well known and frequently observed effects of osmotic and other disturbances.

Obituary.

JOHN DIXON MANN, M.D., F.R.C.P.,

PROFESSOR OF FORENSIC MEDICINE AND TOXICOLOGY, MANCHESTER UNIVERSITY, AND HONORARY PHYSICIAN TO THE SALFORD ROYAL HOSPITAL.

DURING the last twelve months the death-roll among the teaching staff of the Manchester School of Medicine has been unusually long, and following soon after the lamented loss of Professor Young we have to record with deep regret the death of John Dixon Mann, the Professor of Forensic Medicine and Toxicology in the University of Manchester. Up to about a week before his death, which took place at his home in Plymouth Grove, Manchester, on Saturday, April 6th, Dr. Mann was in good health, and, though he was over 70 years of age, was going about his work as usual. He died from acute pneumonia after only a few days' illness.

Dr. Mann was born at Kendal in 1840, and, according to the custom of the time, as soon as he decided to enter the medical profession, he became apprenticed to a medical man in Kendal. He received his medical education at the Royal School of Medicine in Manchester, and took the diplomas of M.R.C.S. and L.S.A. in 1862. In 1880 he obtained the M.D. of St. Andrews University, and also became a Member of the Royal College of Physicians of London, being elected to the Fellowship ten years later. For many years after he became qualified he was engaged as a general practitioner in Manchester, and not until 1882 did he obtain his first appointment as Honorary Physician to the Salford Royal Hospital, a position which he retained to his death. This appointment was the first step towards giving up general practice, and was soon followed by a further teaching appointment at Owens College. In 1885 Dr. Cullingworth, who up to then had been Lecturer in Forensic Medicine and Toxicology, was appointed to the Chair of Obstetrics and Gynaecology rendered vacant by the death of Dr. J. Thorburn, and Dr. Dixon Mann succeeded to Dr. Cullingworth's place. In 1892 the Lectureship was changed to a Professorship, and Dr. Mann from that time to his death continued to be Professor of Forensic Medicine and Toxicology. His lectures were always practical and to the point, possibly too matter of fact to be very attractive, and he was at his best in his practical classes, where he could talk at his ease and demonstrate. His classes on the identification of poisons were especially useful; his numerous original methods in experimental analyses made his teaching most valuable, and many a student of his has found the practical utility of Dr. Mann's "tips" when faced in practice with the task of detecting poisons.

His position as Professor of Forensic Medicine and Toxicology made him much sought as an expert witness in the law courts, but, as many a member of the Bar has found out, he was always a most difficult witness to deal with. He gave his evidence in a straightforward and extremely direct and positive way, and always seemed very greatly to resent attempts of counsel to make him modify his statements. So much was this the case and so impatient did he show himself of what he regarded as legal quibbles and irrelevancies that he was never a great favourite in the courts, and it was rather because of his manner than from any doubt as to his position as an authority that he appeared in the courts perhaps less frequently than might have been expected. In spite, however, of his positiveness in giving evidence, he always felt that evidence of the character that he might be called on to give not only invariably carried with it grave responsibility, but often entailed a certain amount of odium from one side or the other. This caused him almost instinctively to shrink from criminal trials, and he often said that the trouble and annoyance of having to submit to cross-examination, often after weary waiting in the court, were not repaid by any fees received.

Dr. Dixon Mann was perhaps best known outside Manchester through his valuable work on *Forensic Medicine*

and Toxicology, the first edition of which appeared in 1893. A second and third edition were soon called for, and the fourth and last edition, which was greatly enlarged and improved, appeared in 1907. The book soon became a standard work of reference and was often quoted in the law courts. In the section dealing with poisons much of the material was the result of Dr. Mann's own work and experience. In addition to the laboratory at the Manchester University he had a private laboratory of his own, and he spent a considerable part of his time in patient and laborious experiments and investigations. He also published in 1904 a work on *The Physiology and Pathology of the Urine*, a second edition of which was required in 1908. This entailed a vast amount of work in physiological chemistry, and it was in the chemical investigation of disease that he seemed to find his chief occupation and attained his greatest successes. He wrote numerous articles in various works of reference, such as Quain's *Dictionary of Medicine* and Bain's *Textbook of Practical Medicine*, as well as numerous papers in the various journals, of which may be mentioned "The Causes and Treatment of Oedema" (BRITISH MEDICAL JOURNAL, 1905), "Extremes in Mutability of Symptoms in Disseminate Sclerosis" (BRITISH MEDICAL JOURNAL, 1909), and his article on "Some of the Effects of Excessive Tobacco Smoking" (BRITISH MEDICAL JOURNAL, 1908). All his writings were marked by an eminently practical spirit and common sense, and he endeavoured to make no assertions he could not substantiate by experimental proof. His position as Honorary Physician at the Salford Royal Hospital afforded him abundance of clinical cases on which to base his observations, and he never failed to submit his opinions to the most rigid tests that laboratory experiments could suggest.

At various times he acted as external Examiner in Forensic Medicine and Toxicology in the Universities of London, Oxford, and Sheffield, and occupied the position of President, and later of Trustee, of the Manchester Medical Society, President of the Manchester Pathological Society, and Chairman for several years of the Manchester and Salford Sanitary Association; he was an active member of the Pathological Society of Great Britain and Ireland and of the Manchester Literary and Philosophical Society. He took a leading part in the general work of the Manchester University, and at the time of his death and for several years before represented it on the General Medical Council. The mere list of his numerous activities is sufficient to show that he was a man of the widest sympathies. Some years ago he took an active part in the work of the British Medical Association, and though of late years his other work had precluded this, he always continued to show the fullest sympathy with the aims and objects of the Association. In matters of professional etiquette he held that gentlemanly common sense should be the ultimate basis of medical ethics, and his own professional conduct was so unquestionably and strictly correct, especially in his relations with general practitioners, that he was often appealed to by younger practitioners, who were doubtful of the correct attitude to be adopted in disputes. He was, in fact, looked on in Manchester as an authority in medical ethics, whose practice was always consistent with his preaching.

He had a fairly large practice as a consulting physician in Manchester, though this came late in his life. In the earlier part of his career, and before his appointment as lecturer at Owens College and professor at the university, he had few opportunities of becoming known to medical students. His position as physician at the Salford Hospital hardly brought him into much contact with medical students, who only occasionally resort to this hospital; hence few of the students knew his ability as a practical clinician, but men who had been resident in the Salford Hospital were always impressed not only with his kindly interest in his patients, but with his scientific thoroughness and the great care he took in investigating disease. His work in forensic medicine had taught him the importance of being sure of his diagnosis before he expressed any opinion; and when he gave what the public might regard as a wavering, uncertain opinion on a case, it might be taken for granted that there were real difficulties which he was not inclined to gloss over by an assumption of certainty not warranted by facts.

The funeral took place at Bowdon parish church on April 10th, and as an evidence of the universal esteem in which he was held there were deputations from the University of Manchester, the Salford Royal Hospital, and various other institutions with which he had been associated, in addition to a large number of individual medical men and private friends. Wreaths were sent "From the patients, sisters, nurses, and residents in his medical wards," and a cross composed of lilies and orchids bore the following message: "From the nursing staff of the Salford Royal Hospital, a loving and grateful tribute to the honoured memory of our physician and teacher who has been for so many years an inspiration to us."

THOMAS RENNIE, M.D.,

FORMERLY OF FOOCHOW, CHINA.

WE have to record with deep regret the death in Aberdeen, on April 11th, of Dr. Thomas Rennie, late of Foochow, China, and for many years doctor to the European community of that important city.

Dr. Rennie graduated with "highest honours" at Aberdeen University in 1872. After acting for a short time as assistant to Dr. Bruce of Dingwall, N.B., he proceeded to Takao, Formosa, in 1873. In 1880 he removed to Foochow, where he practised till his retirement in 1911, after thirty-eight years of arduous work in what for most of the year is a hot and trying climate. During all these years Dr. Rennie had only three brief holidays at home. Even these were not complete holidays, for he made it a practice to devote a part of his furlough to familiarizing himself with recent medical developments, and, with this in view, visiting London and other medical centres.

Dr. Rennie was a fine example of that type of medical man, sometimes met with abroad but rarely elsewhere; as it is evolved by the peculiar circumstances under which they have to work, including complete medical isolation. Called upon to deal, on his undivided responsibility, with all kinds of disease in all kinds of nationalities, without skilled assistance or skilled nursing, often with inadequate or extemporized appliances, the young doctor, if he has the right grit, acquires a degree of adaptability, of self-reliance, of resourcefulness, and of all-round skill such as is rarely met with in countries where the consultant, the specialist, the operating surgeon, and the trained nurse are at command. Such a man was Dr. Rennie. He "got on" with everybody—European or Chinese. He could tackle a cataract or a laparotomy, a midwifery case or a fever, a fistula in ano or a skin disease as successfully as any consultant, operating surgeon, or specialist in this country. His experience in private and hospital practice was as varied as it was extensive. Furthermore, in addition to the knowledge and skill thus acquired, his patients had the benefit of the most recent advances in medicine and surgery, for he was a diligent student of current medical literature, and could and did use his microscope in diagnosis.

He had a working knowledge of two dialects of the Chinese language—Amoy and Foochow—and perhaps the most telling testimony to Dr. Rennie's social and professional worth is the fact that for many years he had, in addition to his European and hospital work, a large and increasing practice among the Chinese merchants and officials at Foochow. Dr. Rennie was a great favourite. He had excellent social qualities, and, moreover, could shoot, fish, ride, or play a game of racquets with the best—qualities much appreciated in a sporting community such as that of Foochow. His many friends, both in this country and in China, will be grieved to hear of his death.

Dr. Rennie made no serious contribution to medical literature. He disliked writing. In view of his great experience and sound judgement this is to be regretted.

He has left a widow, three sons, and a daughter to mourn his loss. One of his sons is in the profession—a captain in the Indian Medical Service.

PATRICK MANSON.

EDWARD MASON WRENCH, M.V.O., F.R.C.S.,

SURGEON-LIEUTENANT-COLONEL, V.D.

MR. E. M. WRENCH, of Baslow, one of the best known practitioners in the north of Derbyshire, with whom many members from other parts of the country must have made acquaintance at the Annual Meetings of the British Medical Association, died suddenly at Buxton on March 12th. Although 78 years of age, Mr. Wrench was

an active cyclist, and on the morning of his death had gone out for a cycle ride, apparently in his usual health. He was found by passers-by leaning against the railings on the roadside, and died very quickly, without being able to communicate with those about him. Mr. Wrench had had two attacks of rheumatic fever, had long suffered from a defect of the mitral valve, and on two previous occasions had had attacks of heart failure.

Mr. Wrench, who was the son of the Reverend T. W. Wrench, Rector of St. Michael's, Cornhill, was born on July 1st, 1833. He received his medical education at St. Thomas's Hospital, and obtained the diplomas of M.R.C.S. and L.S.A. in 1854, in which year he went out to the Crimea; he was first placed in charge of the wounded from Inkerman, in the hospital in the Russian Military School, Balaclava, and was afterwards attached to the 28th Regiment, with which he served in the trenches during the attack of December, 1854. He had been gazetted Assistant Surgeon to the 34th Regiment in November, and joined it on its arrival in the Crimea. He served during the terrible winter of that year, and was present at the capture of the quarries, the successful assault on the Redan of June 18th, and the final capture of Sebastopol on September 8th, 1855. He was mentioned in dispatches, and received the Crimean medal and clasp for Sebastopol, and the Turkish medal. Returning from the Crimea in 1856 he was transferred to the 4th Lancers, went to Madras with that regiment in the following month, and served with it during the whole of the Indian Mutiny. For his services in India he received the Indian medal and clasp for Central India. He returned to England in 1860, and married in 1861 his cousin, the daughter of Mr. William Kirke, of Markham Hall, Nottinghamshire, by whom he is survived. He retired from the army in 1862, and settled at Baslow on his appointment as surgeon to the seventh Duke of Devonshire. During his long connexion with Chatsworth he had the medical care of many notable and distinguished persons, and on one occasion attended the late King Edward VII professionally. The decoration of a Member of the Victorian Order was conferred upon him by King Edward on the occasion of his last visit to Chatsworth.

Mr. Wrench took the diploma of F.R.C.S.Eng. in 1870, and was Consulting Surgeon to the Whitworth Hospital, Darley Dale. In 1864 he joined the 3rd Battalion of the Derbyshire Volunteers, serving as Ensign and Lieutenant, until gazetted Surgeon in March, 1870. In 1892 he was promoted to Surgeon-Lieutenant-Colonel, and in the following year received the V.D.; he retired in 1900 with the rank of Lieutenant-Colonel. Mr. Wrench had held the office of President of the Midland Branch, and after the Annual Meeting of the Association at Sheffield in 1908 he conducted a large party over the park and house of Chatsworth. He was appointed a magistrate in 1898, and was a regular attendant at the Bakewell Sessions. As has already been said, Mr. Wrench was very highly esteemed, not only in his own immediate neighbourhood, but throughout the northern part of Derbyshire. He was deeply interested in archaeology, local history, and geology, was president of the Bakewell Naturalist Field Club, and was an authority on place names.

We regret to announce the death of one of the leading dental practitioners in the north of Scotland, who was also a member of the medical profession, Dr. W. H. Williamson; he died at Aberdeen on April 13th. He was born at Leicester fifty-nine years ago, but spent practically all his life in Aberdeen, where his father, the late Mr. Williamson, carried on a large dental practice for many years. He was educated at the Grammar School, Aberdeen, and afterwards studied medicine at Aberdeen University, taking the M.B. degree in 1874 and the M.D. in 1880. He proceeded to Edinburgh and became L.D.S. in 1881. Afterwards he went to Pennsylvania University, where he took the degree of D.D.S.Mass. On the death of his father he entered on practice on his own account, and in the course of his career as a dental surgeon attained to a high place in his profession. He was President of the British Dental Association in 1904–5. In Aberdeen Dr. Williamson was held in esteem by all with whom he came in contact. He was long a Member of the Council of the Aberdeen Artists' Society and was also an ex-President of the Aberdeen Philosophical Society. For many years he acted as Dental Surgeon to the Aberdeen Royal Infirmary. Predeceased by his wife, he leaves a family of two daughters and three sons, the eldest of whom was associated with him in practice.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

The following candidates have been approved at the examinations indicated:

D.P.H. (*Both Parts*).—R. A. Askins, *S. A. Baillie, L. E. H. R. Barker, A. H. Brehaut, J. S. Byrne, A. Connal, Josephine Coupland, A. D. Cowan, G. H. Dart, F. C. Davies, Jessie G. Duncan, T. Evans, T. P. Fraser, M. F. Grant (Captain, R.A.M.C.), Dorothy C. Hare, H. C. Jeffreys, Elizabeth Knight, A. A. D. McCabe-Dallas, W. Macewen, J. MacMillan, P. R. McNaught, B. MacPhee, H. C. Manning, A. Robertson, L. J. Short, H. G. Smith, J. R. Sutherland, R. W. Telford, W. R. E. Unthank, S. B. Walsh, E. Wardman-Wilbourne.

* Distinguished in Chemistry.

UNIVERSITY OF EDINBURGH.

Honorary Degrees.

The Senatus Academicus has resolved to confer the honorary LL.D. degree upon Professor J. Theodore Cash, M.D., F.R.S., Aberdeen University; Dr. Robert Munro, F.R.S.E., Largs; and Sir James Porter, Director-General, Medical Department of the Royal Navy.

UNIVERSITY OF GLASGOW.

The following were among the degrees conferred at a meeting of the Senate on April 22nd:

M.D.—*C. A. Gourlay, M. Macnicol, C. K. Toland.

C.B., Ch.B.—†W. B. Wilson, †S. S. Meighan, ‡N. V. C. Lothian, B.Sc., ‡J. B. Orr, ‡T. Walmsley, ‡J. C. Pyper, ‡A. Gardner, J. A. Aitken, J. C. H. Allan, J. Angus, J. G. Becker, V. Borland, N. Cameron, G. W. Clark, G. Dalziel, A. H. Davidson, W. T. G. Davidson, K. Falconer, J. J. Gibb, L. Glushak, C. W. F. Greenhill, J. A. Harper, A. G. Henderson, A. J. Joubert, F. A. Kerr, T. J. Kirk, R. P. A. Kirkland, J. F. Lang, F. W. K. Lawrie, C. Lundie, D. Meek, M. J. Murray, A. Neilson, A. Rae, Lucy M. Ross, S. Rutherford, H. C. v. d. W. Smit, M. Sommerville, L. T. Stewart, T. Waterhouse, E. C. White, W. Whitelaw, H. G. Wilson.

D.Sc.—L. Findlay.

B.Sc. (*in Public Health*).—H. R. Sloan, E. Watt.

* Commendation for thesis. † Honours.
‡ Passed with commendation.

Bellahouston Gold Medals for eminent merit of a thesis for the M.D. have been awarded to Drs. Hugh Morton and Peter D. Strachan, the latter also obtaining the *Straits Settlements Gold Medal* in Tropical Medicine. Among the special class prizes of the same university is the Asher-Asher Gold Medal in Laryngology and Rhinology which has been awarded to Mr. J. S. K. Boyd.

Commemoration Day.

The proceedings at the Biennial Commemoration on Tuesday, June 25th, will include a meeting at 10.30 a.m. in the Bute Hall for divine service, an oration on Sir Joseph Hooker by Professor F. O. Bower, D.Sc., F.R.S., and the conferring of honorary degrees. At 3 p.m. the ceremony of presenting to the university a bronze medallion of Professor Wm. Stewart, D.D., LL.D., will take place, and tea will be served thereafter. At 7 p.m. a dinner will take place in the University Buildings, at which the honorary graduates and delegates attending the Congress of the Universities of the Empire will be entertained as guests. This function will be open to graduates and friends, including ladies. Applications for tickets for each and all of the meetings must be made to the Secretary of the University Court on or before June 12th.

Statistics.

Among statistics published in the minutes for the meeting of the General Council held on April 24th are the following:

Comparison of the Number of Matriculated Students in Sessions 1908-9, 1909-10, and 1910-11, with the Average Numbers for the Three Quinquennial Periods ended 1908.

	Average of Five Years ending			Year 1908-9.	Year 1909-10.	Year 1910-11.
	1898	1903.	1908.			
Medicine—						
Men		612	635	626	627	651
Women		72	61	83	71	78
Total	703	684	696	709	698	729

Comparison of Number of Degrees granted for 1908-9, 1909-10, and 1910-11, with the Average for the Two Quinquennial Periods ending 1908.

M.D. Honours	2	2	3	—	1
Commended	6	6	10	6	8
Ordinary	14	15	10	9	13
M.B., Ch.B. (or C.M.)					
Honours	2	4	6	3	3
Commended	9	11	16	7	8
Ordinary	84	82	106	84	87
Total	117	120	151	109	120

UNIVERSITY OF DUBLIN.

THE following were among the degrees conferred at a meeting of the Senate on April 18th:

M.D.—F. V. Agnew, J. Beckett, R. Morrow.
M.B.,Ch.B., B.A.O.—F. V. Agnew, T. Brook, F. A. Bourke, H. M. Fleming, R. E. Grandy, S. A. Lane, R. G. J. McEntire, J. N. G. Nolan, H. E. Williams, T. G. Harpur.

CONJOINT BOARD IN ENGLAND.

THE following candidates have been approved at the examinations indicated:

FIRST COLLEGE (*Part IV, Practical Pharmacy*).—L. W. Barlow, R. E. Barnsley, P. N. Button, M. H. Cane, H. G. R. Canning, W. K. Churchouse, E. C. Cline, E. Coplans, D. H. Derry, E. G. Fisher, R. Hodson, F. C. Hunot, C. S. J. Kearney, G. Kinneir, H. B. Logan, P. E. Lones, W. U. D. Longford, O. D. B. Mawson, L. M. J. Menagé, L. Milton, A. V. Moberly, R. F. Quinton, J. M. Redding, J. E. Rivera, C. M. Ryley, J. T. Samuel, H. N. Sealy, B. L. Skeggs, K. V. Smith, W. J. D. Smyth, D. L. Spence, J. R. W. Stephens, W. A. Stewart, J. S. Strachan, W. F. Thompson, V. C. W. Vickers, W. G. Watson, F. L. Webster.

SECOND COLLEGE (*Anatomy and Physiology*).—C. H. P. Allen, E. Atkinson, F. E. Bendix, C. F. Beyers, S. V. Bhat, J. W. Bouwer, Isabel F. Buckle, E. Catford, E. J. Cooke, E. R. Dermer, M. Dia, M. K. El Kholy, A. Z. Elsayed, D. T. Evans, R. F. Fagan, H. Fernando, V Fox, G. F. P. Gibbons, G. L. Grant, W. H. Harris, S. Hutchinson, E. L. Ivens, I. S. James, T. R. Kenworthy, N. H. Linzee, W. D. McDonald, F. O. MacGibbon, L. A. Malik, H. W. Maltby, G. W. Maw, B. R. Mayman, H. G. Moser, S. H. Paul, J. E. Pearce, *A. C. Perry, D. J. Platts, L. H. Poh, G. W. Pool, H. P. Price, A. L. Robinson, G. F. Rowcroft, T. O. Shah, S. Simons, B. H. Singh, P. de S. Smith, J. W. G. Steell, W. B. R. Stower, P. W. Symons, H. B. Taylor, O. R. Unger, W. E. Wade, G. L. Wilkinson, M. U. Wilson.

* Recommended for Begley Studentship.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have been approved in the subjects indicated:

SURGERY.—*†L. K. Edmeades, †C. W. Jenner, *†H. Robinson, *†C. B. Welsby, *†H. D. Willis.
MEDICINE.—†H. Cox, †E. B. Keen, †P. McGinnis, †C. B. Welsby, *†H. D. Willis.
FORENSIC MEDICINE.—W. C. Himely, C. de C. W. Langdon, A. H. Macklin.
MIDWIFERY.—J. A. A. Boddy, R. B. F. Frazer, R. Jones, R. V. Martin.

*Section I. †Section II.

The diploma of the Society has been granted to Messrs. L. K. Edmeades, E. B. Keen, P. McGinnis, C. B. Welsby, and H. D. Willis.

Medico-Legal.

SECRET REMEDIES.

BEFORE Mr. Hedderwick at North London Police Court on April 17th, John James Huggins and George Douglas Buchanan, both of 67, Isledon Road, Holloway, were summoned at the instance of the Commissioners of Customs and Excise for selling Jap's Pills and Jap's Balm, preparations liable to duty, without an Inland Revenue licence. Mr. Simpson, who appeared for the Commissioners, said that the defendants carried on business as "Jap and Co.," and manufactured and sold these pills and ointments at one penny a box. They were for so doing liable to a licence duty, and the Commissioners contended that each box should be stamped with a three halfpenny stamp. The defendants, in the notice printed on the pill boxes, said that the pills were prepared from the formula of Beecham's Pills, and that the balm was prepared according to the formula for Zam-Buk. The penalty for selling such medicines without a licence was £20, and for selling the medicines without being properly stamped, £10. Mr. Huggins, one of the defendants, admitted the sale, but submitted that there was no secret about the process of manufacture, the formula in each case having been taken from a book, *Secret Remedies*, and as they were both recognized and published formulas there was no necessity to pay a licence duty or a stamp duty. He quoted the *Chemists' Diary* to show that the law had been complied with. Mr. Simpson said that the exemption referred to applied only to medical men and qualified chemists and druggists who made up and sold remedies such as were known to and recognized by the *British Pharmacopoeia*. The defendants seemed to think that because they got these formulas from the book, *Secret Remedies*, they were protected; but the defendants were not qualified chemists recognized by the law, and the remedies mentioned in the book were not approved. The sole object of the book was to expose frauds on the public. Mr. Hedderwick, in giving his decision, said he thought the defendants had been under an honest misapprehension, and had believed that because the prescriptions of these articles had been published in *Secret Remedies* they were protected, but that was not what the Act contemplated. The case had drawn attention to the very remarkable work, *Secret Remedies*, published by the British Medical Association for the protection of the public. From this it seemed that Zambuk, which was said to be identical with Jap's Balm, cost one farthing per box to make, and that Beecham's Pills, which were said to be worth a guinea a box, cost no more than a farthing for a boxful. The defendant was ordered to pay fines and costs amounting to £20 6s. Mr. Huggins, on hearing the decision, said that he would not waive his objection to the summonses, which were not in order. Ultimately the summonses were dismissed, the magistrate intimating that if fresh summonses were taken out against both partners and the cases were proved, he would fine both.

NURSE'S FALSE TESTIMONIAL.

Prosecution by the London Hospital.

ON April 13th, at the Eye Borough Petty Sessions, Evelyn McCoy was charged with having presented a false certificate of training, purporting to be a certificate of the London Hospital, with a view to obtaining a post as nurse under the Hartismere Board of Guardians. The certificate stated that she had been three years in the service of the London Hospital, whereas she had never been in that institution.

The prisoner pleaded guilty.

Mr. A. G. Whitting, on behalf of the London Hospital, briefly explained the facts. The prisoner had sent in a copy of a testimonial purporting to be a certificate of training signed by the officials of the hospital who usually signed such certificates. A discrepancy was, however, noticed which prompted the clerk to the guardians to write to the authorities of the London Hospital with a view to verifying the certificate. It was found that no such person had ever been trained at the London Hospital.

The prisoner expressed deep regret for what she had done.

The Mayor, in sentencing, stated that, as there was nothing previously against the prisoner, the Bench were inclined to be lenient with her. They fined her £1 and costs, or, in default, fourteen days' hard labour. They thought that very lenient for a serious offence.

WORKMEN'S COMPENSATION ACT.

Grease and Dirt getting into a Cut.

IN Chandler *v.* Great Western Railway (Court of Appeal, March 12th) the applicant was a fireman. On July 8th, 1910, he cut his finger with a table knife while having his dinner at his lodgings. Applicant was then living in South Wales. Applicant went to work on his engine, but later blood poisoning supervened and the finger had to be amputated. The county court judge found that the blood poisoning, which was the cause of the lost finger, was due to an accident arising out of and in the course of the employment. The Court of Appeal held that as infection might have got into the man's hand in a number of ways there was no evidence that he was the victim of an accident arising out of and in the course of his employment. The appeal was therefore allowed.

Medical Referees as Witnesses.

ENQUIRER asks whether a medical referee appointed under the Workmen's Compensation Act can give evidence in a case in the same court in which he acts as referee.

*** By Section 10 (1) of the Workmen's Compensation Act: "Where a medical referee has been employed as a medical practitioner in connexion with any case by or on behalf of an employer, or workman, or by any insurers interested, he shall not act as medical referee in that case." Provided there is no infringement of this clause, a medical referee has the same liberty of action as any other practitioner.

BOOK DEBTS AND LATER FEES.

M.B. writes that he has recently come into a partnership without buying any of the book debts. His partner claims fees for confinements and operations in payment of his outstanding bills. He wishes to know if this is correct. He thinks that such fees, being definite payments for definite services, and commonly paid as cash, should be credited to the firm, and not to his partner.

*** Our correspondent is entitled to his share of all moneys paid for professional work done after his entrance into the firm. Fees paid for confinements and operations at the time could have no reference to old outstanding accounts, and would belong to the firm. It is only where credit is given, and accounts are periodically rendered, that payments made by the debtor, unless he directs otherwise, are presumed to be for the satisfaction of debts in the order of their priority.

VISITING MEDICAL OFFICERS OF HOSPITALS AND THE CORONERS ACT, 1887.

A MEMBER writes with reference to Dr. Boyd Robinson's letter, p. 929: The Act states that if attendance on the patient is the duty of the medical officer to the hospital there is no fee for an inquest. In our hospital we get over this difficulty in the following manner: Each officer takes one month's duty, A. B. C. D. E. F. During A.'s month it is his duty to attend cases of accident, and therefore he can claim no fee, but if B. attends the case and is summoned to the inquest he can claim the fee. Therefore let A. promptly hand over the case if death is expected to B. or C., etc. We cannot always arrange this, but when we can we get the fee. There can be no doubt that the Act was not intended for these small hospitals, where there is no resident, and where practically the work is done for nothing.

The Services.

TERRITORIAL FORCE.

HOSPITAL TREATMENT, MEDICAL EXPENSES, AND GRATUITIES.

THE following special Army Order dated April 15th has been issued:

Hospital Treatment, Medical Expenses and Gratuities.—1. In view of difficulties which have been experienced in the administration of paragraphs 658 to 666, Territorial Force Regulations, 1910, and of concessions which it has been found possible to make in the matter of medical expenses and the special gratuity referred to in the new paragraph 664A, the Army Council have decided to substitute the following for the paragraphs mentioned above. The amendments should be brought to the notice of all concerned.

2. Attention is particularly directed to the necessity of dealing with claims under this section with the utmost promptitude, those which can be settled locally being so dealt with and those requiring decision by the Army Council being forwarded to the War Office with the necessary particulars with the least possible delay.

3. General Officers Commanding are requested to direct the special attention of all officers of the Royal Army Medical Corps (Territorial Force) to the rules with regard to general procedure. Extra copies of this Special Army Order will be distributed for the use of all concerned.

4. A poster (Army Form E 631) calling the attention of all members of the Territorial Force to these rules has been prepared and will be displayed in all drill halls. Copies will shortly be issued to all concerned.

5. The following will be *substituted* for paragraphs 658 to 666, Territorial Force Regulations:

Regimental Officers and Men.

658. In cases of disability, whether of injury or sickness, officers and men of the Territorial Force may be granted hospital treatment, medical treatment or refund of medical expenses, pay or gratuity, under the conditions laid down in paras. 659 to 666.

General Procedure.

659. At camp or other duty, all cases of injury or sickness will be reported at once to the medical officer in charge, who will decide how the case is to be disposed of—for example, taken to hospital, sent home, or treated in quarters. A diary will invariably be kept with details of all cases reported or treated.

659A. Should no medical officer be present (for example, in case of an injury received at musketry) the senior officer may summon medical aid, if he is satisfied that the matter is sufficiently urgent. He will in any event make a full report of the case to superior authority.

659B. If the disability is temporary and can be adequately treated by the medical officer at the place of training, it will be dealt with there.

659C. If hospital treatment is necessary, the case will be sent to a military hospital if one is available.

659D. In cases of urgency or where the patient cannot be moved to a military hospital, such arrangements as are necessary must be made, for example, the case may be taken to the nearest civil hospital.

659E. If hospital treatment is not necessary, but it is clear that the officer or man will be unable to perform further military duty during the period for which he has been called up, he will be sent home.

659F. A board will be held as soon as possible (where practicable, on the day on which the disability is reported) to investigate and report the circumstances as affecting the question whether the injury or sickness was contracted in and by the performance of military duty. The board should record such opinion as they are able to form on this point. At camp the board will consist of the C. O. and medical officer of the unit, the adjutant and a regular R.A.M.C. officer, if available. In other cases the board will consist of such of these officers, or their nearest representatives, as are available.

660. Disability will only be regarded as contracted in and by the performance of military duty when it is incurred during the actual performance of military duty and arises directly out of such performance. It will not be so regarded if, although contracted during the period of such duty, it is due to the ordinary risks of indoor or outdoor life to which military duty carries with it no special liability. In cases of sickness, the proceedings of the board will be forwarded to the Director-General, Army Medical Service, with whom the final decision will rest, if any claim is made involving expense to the public. In cases of injury the G.O.C.-in-C. will decide the case without reference to the War Office.

660A. If it is decided that the disability was not contracted in and by the performance of military duty, the officer or man will have no claim on the public for pay, gratuity, or medical expenses, except as provided for in para. 661 and in the special cases dealt with in paras. 663A and 664A.

660B. If the board considers the disability to have been caused in and by the performance of military duty, the medical officer, on sending an officer or man home disabled, or the medical officer of a military hospital, on discharging him from hospital, will give him a certificate stating (1) whether he is in need of further medical treatment, (2) whether he is incapacitated from following his trade or calling, and (3) the minimum probable duration of the disability. If the case is in a civil hospital, the certificate of the hospital doctor will be accepted. The certificate will be forwarded in support of any claim.

660C. The medical officer, on sending home or discharging from a military hospital an officer or man who requires further treatment and is not entitled to medical attendance under the National Insurance Act,* will endeavour to ascertain whether treatment by a regular R.A.M.C. officer is possible, and, if it is available, will direct the officer or man to apply for such treatment.

660D. When a case is sent to a civil hospital, the principal medical officer of the command will be informed, and will watch the case with a view to arranging, in the event of further treatment being necessary on discharge, for that treatment to be given, if possible, by a regular R.A.M.C. officer.

Pay.

661. In all cases of disability occurring at camp, manœuvres, or authorized courses of instruction, and duly reported as above, pay will be issued to the officer or man until the end of the period of training for which he is called up, whether he remains at the place of training, or is sent to a military or civil hospital. If a man is sent home under para. 659E, he may draw his pay and allowances to the end of the training period unless eligible for a gratuity under para. 664 or 664A.

661A. If an officer is suffering from a disability contracted in and by the performance of military duty and is sent to a military or civil hospital, or is sent home certified as incapacitated, pay may be issued, at the discretion of the Army Council, for a period not exceeding six months from the date on which the disability was incurred.

661B. If a N.C.O. or man is injured in and by the performance of military duty and through no fault of his own, and is sent to a military or civil hospital by competent military authority, pay may be granted until discharge from hospital for a period not exceeding six months. In the case of (1) married N.C.Os. and (2) married privates remaining at camp or in hospital for the whole prescribed period of camp, separation allowance will also be issued.

Charges for Treatment in Hospital, etc.

662. No charge will fall upon a patient for treatment by regular R.A.M.C. officers, or by medical officers of the Territorial Force when present at camp or training, or when in case of urgency he has been sent to a civil hospital, or a civilian practitioner has been called in, by competent military authority.

662A. An officer or man treated in a military hospital, or in a civil hospital in cases where the War Department bears the expense, is subject to the same stoppages as are levied in the Regular Army so long as he receives pay. Should no pay be issuable no charge is made for subsistence. In the case of injury received by a non-commissioned officer or man in and by the performance of military duty, the whole stoppage may be remitted as laid down in the Allowance Regulations.

Medical Expenses.

663. If the disability is incurred in and by the performance of military duty, and an officer or man not entitled to medical benefit under the National Insurance Act is sent home (whether on discharge from hospital or not) and is certified as requiring medical treatment and treatment by a regular R.A.M.C. officer is not available, reasonable medical expenses will be allowed. In the case of non-commissioned officers and men, the total issuable under this para. and under para. 664 will not exceed a total of 3s. 6d. a day for six months.

663A. Medical expenses may also be allowed as above in the case of injuries sustained by officers or men arising out of their riding or driving horses when in uniform and going to or returning from an authorized drill, parade, or other military duty which necessitated their riding or driving. It will be a necessary condition of such a grant that the accident arose from circumstances outside the control of the claimant.

Gratuity.

664. If, in the case of disability incurred in and by the performance of military duty, a man is sent home certified as unable to follow his trade or calling, a gratuity may be allowed to him, for the period certified under para. 660B, up to a maximum of six months from the date on which he incurred the disability, provided that the total amount allowed for such gratuity and for medical expenses under para. 663 shall not exceed the total of 3s. 6d. a day for six months. The gratuity will not be issuable for any period during which the man is in receipt of pay or subsisted in a hospital at Government expense.

664A. Should a N.C.O. or man of the Territorial Force be injured in the performance of regimental sports of a definitely military character which form an officially recognized element of the camp period, the rate of gratuity will be 2s.† and the maximum period of issue three months.

Liability when Treatment Provided is Declined.

665. If an officer or man refuses to be treated in a military hospital or by a regular R.A.M.C. officer when such treatment is available, he surrenders his claim to refund of medical expenses, either as such or as part of the gratuity. This regulation should be brought to the notice of any patient who asks to be treated by his own doctor.

Arrear Claims.

666. Should an officer or man become incapacitated or require treatment, subsequent to the performance of military duty, on account of a disability which he considers to have been contracted in and by the performance of such duty, but which was not reported, or being reported was not considered likely to incapacitate him or necessitate treatment, he should at once report the case through his superior officer. If such report is not made, no liability for medical expenses can be admitted. The G.O.C. will then obtain a report on the case by a regular R.A.M.C. officer and, if necessary, cause a board to be held in accordance with para. 659F. He will then adjudicate on the case or refer it for the decision of the Director-General, Army Medical Service, as laid down in para. 660.

* The National Insurance Act does not come into operation until 15th July next.

† Pending the operation of the National Insurance Act cases of this character should be referred to the War Office for decision.

Medical News.

THE Fourteenth International Congress of Anthropology and Prehistoric Archaeology will be held at Geneva this year in the first week of September.

THE Gresham Professor of Medicine will give four lectures on the use and abuse of alcohol at the City of London School, Victoria Embankment, E.C., on May 7th, 8th, 9th, and 10th, at 6 p.m. on each day.

THE summer course of post-graduate demonstrations at the Manchester Royal Infirmary will begin on Tuesday, May 7th, when a medical demonstration will be given, to be followed by a surgical demonstration on Friday, May 10th. These demonstrations will be held at 4.30 p.m. on each Tuesday and Friday throughout the summer session, with the exception of Whit-week.

IN the *Nyasaland Protectorate Sleeping Sickness Diary*, Part XVI, 1912, further details are given of the spread of trypanosomiasis in that region. Since the issue of the last number of the series, when the cases of sleeping sickness reported up to October 12th, 1911, numbered 55, 8 further cases had been recorded. During the month of November no fresh cases were observed. The patrols who are looking for cases report, however, that natives frequently hide their sick, and that more severe measures will be necessary for dealing with offenders in this respect. Of the previously reported cases large numbers have now died, but the course of the disease would seem generally to be very slow, in this way differing very materially from the recent Uganda epidemic.

THE Warren Triennial Prize, founded by the late Dr. J. Mason Warren, of Boston, U.SA., in memory of his father, is awarded every three years for the best dissertation considered worthy of a premium on some subject in physiology, surgery, or pathological anatomy, the arbitrators being the physicians and surgeons of the Massachusetts General Hospital. The subject for competition for the year 1913 is on some special subject in physiology, surgery, or pathology. Dissertations must be in English, French, or German, and must be typewritten and suitably bound, so as to be easily handled. Work that has been published previously will not be considered in competition. The name of the writer must be enclosed in a sealed envelope, on which must be written a motto corresponding with one on the accompanying dissertation. The amount of the prize for the year 1913 will be £100. Dissertations will be received until April 14th, 1913. A high value will be placed on original work.

A DINNER in connexion with the special appeal recently launched by the authorities of St. Bartholomew's Hospital is to take place at the Mansion House towards the end of the first week in June. We pointed out some years ago the difficulties in which this great hospital was likely to find itself before very long, since the income from its landed property was falling while it was receiving little in the way of donations and bequests from the public. At that time the balance on the wrong side between income and expenditure was quite small, but the overdraft at its bankers has now reached £57,000, and in default of material assistance must almost inevitably go on increasing at the rate of between £7,000 and £8,000 per annum. In addition the structural alterations and rearrangements of the various blocks, long recognized to be necessary, have still to be completed; the expenditure on what has been achieved so far in this direction has been provided mainly by governors of the institution, old students of its medical school, and others closely connected therewith.

DR. MARSHALL PHILIP, Medical Officer of Health, Colombo, mentions in his annual report that a municipal dispensary was opened in February, 1910, with a staff of one medical officer, one dispenser, one lady health visitor, and one orderly. The object of its establishment was to enable the health department to get into closer touch with the sick poor, and it was expected that the information so acquired would be of special value in connexion with the prevention of infantile mortality and diseases such as enteric fever, dysentery, and phthisis. The results were most encouraging, no fewer than 6,179 patients being treated, representing an aggregate of 12,462 visits; 506 cases were discovered and referred to the dispensary by the health visitor. The medical officer visited 106 cases of illness in their homes, and 64 cases of confinement were attended by the municipal midwife. Dr. Philip has recommended the development of the system by the establishment of two more dispensaries.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

MANUSCRIPTS FORWARDED TO THE OFFICE OF THIS JOURNAL CANNOT UNDER ANY CIRCUMSTANCES BE RETURNED.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

CORRESPONDENTS not answered are requested to look at the Notices to Correspondents of the following week.

COMMUNICATIONS respecting Editorial matters should be addressed to the Editor, 429, Strand, London, W.C.; those concerning business matters, advertisements, non-delivery of the JOURNAL, etc., should be addressed to the Office, 429, Strand, London, W.C.

TELEGRAPHIC ADDRESS.—The telegraphic address of the EDITOR of the BRITISH MEDICAL JOURNAL is *Aitiology, London*. The telegraphic address of the BRITISH MEDICAL JOURNAL is *Articulate, London*.

TELEPHONE (National):—
2631, Gerrard, EDITOR, BRITISH MEDICAL JOURNAL.
2630, Gerrard, BRITISH MEDICAL ASSOCIATION.
2634, Gerrard, MEDICAL SECRETARY.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

E. S. W. W., who has tried many remedies, asks for advice in the treatment of a case of excessive axillary perspiration.

CUMNOR wishes to hear of an institution in Cheshire, Lancashire, or North Wales where a woman of 37 of weak intellect (uncertified), of the farming class, can be received. Her means allow of her paying about a guinea a week.

RISK OF INFECTION.

F.R.C.S. writes: A bedroom in my house has recently been painted, the walls distempered, the ceiling papered. I find now that the painter has a cough and is suffering from tuberculosis. Would one of your expert readers inform me how I can render that room free from danger to its occupant without spoiling the walls or ceiling?

THE ADMINISTRATION OF CHLOROFORM.

LETHEON writes: If Junker's inhaler for chloroform uses a vapour such that every press of the ball evaporates 1 minim, and this minim is diluted with 6,000 times its volume of air, how does this compare with Vernon Harcourt's dosimetric machine, which gives 2 per cent. chloroform vapour in the atmosphere breathed? Or, what is the strength with Junker's inhaler?

*** The assumption that 1 minim of chloroform is volatilized and so commingles with a given amount of air, is not borne out by experiment. The amount of vapour varies according to the force with which the air is pumped, and this varies with the depth of liquid in the bottle, the temperature of the bottle and that of the air, and the shaking and splashing of the contents of the bottle. The whole question was examined experimentally by Dr. Waller (BRITISH MEDICAL JOURNAL, April 23rd, 1898, p. 106, and *Lancet*, July 9th, 1904, p. 77) and Dr. Paul Chapman (BRITISH MEDICAL JOURNAL, vol. i, 1906, p. 615); the latter showed that a percentage of vapour of 5 or higher could be delivered from this apparatus. See also articles on Junker's inhaler and Vernon Harcourt's inhaler in the Report of the Special Chloroform Committee of the British Medical Association, price 1s., post free, 1s. 3d.

ANSWERS.

ASPARAGUS.

DR. R. ACKERLEY (Llandrindod Wells) writes: B. B. G. asks "for information as regards the eating of asparagus by the gouty, and whether its use is likely to prolong a gonorrhoeal discharge." There is good reason for thinking that in many cases of gout asparagus is distinctly harmful. I have suggested (*Transactions* of the Royal Society of Medicine, Balneological Section, vol. iii, 1910, page 66) that the harmful ingredient is the common salt, of which cooked asparagus contains 27 to 35 parts in 1,000 (H. Strauss; *Zeitschr. f. Phys. und. Diet. Therap.*, Leipzig, 1908–9, vol. xi, page 14). Asparagus not only contains a large quantity of NaCl, but is generally boiled in water containing a good deal of NaCl and is served with salt butter or sauce containing NaCl. This percentage of common salt would also act as an irritant to the urinary tract, especially if already inflamed.

TWINS.

DR. ELLA SYNGE (Dalles, Oregon, U.S.A.) writes to suggest that the explanation of the case related by "Pastor" in the JOURNAL of March 23rd, p. 708, would be uterus didelphys or uterus septus bilocularis and not hour-glass contraction.

LETTERS, NOTES, ETC.

THE STUDY OF CONDUCT.

DR. A. R. URQUHART (Perth) writes: I am not afraid with any amazement when opinions which are none of mine are attributed to me. The reference may be found on p. 415 of the *Journal of Mental Science* for July, 1910, and it cannot be twisted into a statement that Dr. Mercier judges insanity by a single act or so recommends. I suppose that asylum case-books must contain minute descriptions of insane conduct; but one may desire, without offence, that these should be subordinated to the medical facts—that hospital records should be rather medical than legal—although both may not be amiss.

DR. CHAS. MERCIER (Parkstone, Dorset), writes: I take it very ill that when I try to bluff Dr. Newington into the belief that he has displayed deplorable ignorance of a familiar English word, I should have the hose of your erudition turned upon me, and be drenched, and drowned, and knocked breathless and senseless—stunned by an etymological deluge. Sir, I have not been so dunced upon since, at the meeting of the Association at Exeter, I reproached a local member with incorrect spelling of the name of the local delicacy. "Why," I asked him, "do you spell juncate, junket?" With a readiness and resource that compelled my hearty admiration, he instantly replied, "Junket is quite correct: it is from the Saxon 'junc' = curdled milk." This derivation loses no lustre by comparison with Duchat's derivation of matagrabolise from μάταιος, γράφω, and βάλλω. My books are not yet unpacked, so that I cannot refer, but I am sure that in my Rabelais the word is spelt metagrabolise; and I have no doubt that it is as certainly derived from the Greek as Panjandrum is derived from πάν and ἄνδρος.

So far the question of etymology; but now, Sir, I come to a much more serious matter. It is shocking to me that the Editor of our JOURNAL should take advantage of his position to make an unjustifiable charge against one of his correspondents. You, Sir, have attributed to me, in no uncertain or ambiguous terms, the possession of a classical education. I know not what I have said or done to provoke this accusation. Shades of Shakespeare, of Bunyan, of Cobbett, and of John Bright! Is my English involved, obscure, or slipshod? Is my choice of words pedantic? Is my grammar bad? Is the construction of my sentences un-English? Am I hide-bound in prejudice and unable to assimilate a new idea? Do I niggle about words under pretence of arguing about things? On what is this monstrous imputation founded? However reluctant I may be to seek that legal remedy that is so open (and so profitable) to a person maligned in a public print, I may be compelled to have recourse to it unless you make speedy retraction and apology.

*** Libel is the heel of a journal—its vulnerable part. We hasten, therefore, to pluck the deadly arrow shot by Dr. Mercier from our tendo "*Ashiles*," a pronunciation fashionable in the days of our youth among certain students of medicine who, it may be assumed, shared the advantage claimed by our correspondent for himself of not being in "the possession of a classical education." We feel like Major Dowler when Mr. Winkle made his unexpected appearance, and using the language of that valiant warrior we say: "Dr. Mercier, Sir, Be calm. Don't strike us." We can also say with him in extenuation of our offence that "circumstances were suspicious." That remark about a "manifest Greek origin" had something of the cocksureness attributed to Macaulay by Lord Melbourne, and thus were we misled. But we may conclude, again quoting Major Dowler, that the "circumstances have been explained," and we say to Dr. Mercier, "Your feeling is upright. Conscious innocence. There is my hand. Grasp it." Dr. Mercier's new-logical mind will doubtless accept the validity of the obvious inference as to the value of the opinion that *meta* bewrayeth the origin of the word invented by Rabelais, and conjecturally emended by some English lexicographers.

"AUSCULTATION."

DR. G. BERTRAM HUNT writes from Arosa, Switzerland, as follows: A thrill is "a vibratory movement . . . felt or heard in auscultation." I am writing beyond reach of the *Oxford English Dictionary*, and cannot ascertain what definition Sir James Murray gives therein of the word "auscultation," but wish to point out that the above description of a thrill quoted in last week's BRITISH MEDICAL JOURNAL from the *New English Dictionary* shows that lexicographers, like Homer, sometimes nod. As a thrill is detected by the hand, and not the ear, and cannot be "felt during auscultation," except in the rare instance when the head is directly applied over the heart without intervention of a stethoscope, the word "auscultation" must be here incorrectly used for "physical examination of the chest." This mistake, which is becoming common, of including the whole examination of the chest under the term "auscultation" is not only incorrect etymologically, but may lead, if persisted in, to the relative neglect of inspection, palpation, and percussion. In French the error is even more frequent: "Le jour d'auscultation" means the day on which the chest is examined, and in slipshod writing the term is sometimes misapplied to any medical examination; thus, I noticed in a novel that a doctor was sent for to "ausculter" a damaged leg, which I fear did not mean to listen for crepitus. While the countrymen of Laënnec may, perhaps, be forgiven this solecism, surely in English we should try and limit the use of the word "auscultation" to the stethoscopic or other aural examination of the body; and also refrain from telling our patients that we wish to "listen to" their chests, when we mean that we wish to "examine" them.

THE STORY OF A SWEET PEA.

DR. WILFRID A. ALDRED (Wroxham) writes: The following case may be of interest. A boy aged 10 presented himself at my surgery the other morning with a history of having shot himself over a fortnight previously in the palm of the hand with an air gun loaded with a sweet pea seed. He said that the pea was still in his hand, and that he had declined his father's offer to remove it with a "sheet knife," as he thought he would hurt him more than I should! There was a small circular hole in the centre of the palm from which a little semipurulent fluid could be squeezed; it was only slightly tender, and there was no swelling of the hand. I enlarged the hole under the local application of ethyl chloride, and with a pair of iridectomy forceps removed the pea, which was deeply placed; it was quite soft and was sprouting. Can any of your readers enlighten me as to what would have happened had the pea stayed in its novel surroundings for another fortnight? I was half tempted to try!

A MECHANICAL AID IN BLOOD COUNTS.

THOSE who have occasion to undertake many blood counts, whether for ordinary enumerative purposes or in the course of opsonic estimations, recognize the tedious nature of the task. Dr. Tobjin of Berlin has invented an instrument, to which he has assigned the barbarous name Cytax, which enables the counting and arithmetical computation to be performed mechanically. It is not possible to form a sound judgement as to the practical value of such a machine from a written account, but if, in other hands than those of the inventor, it substantiates his claim, much time and trouble will be saved. The Cytax is supplied by Aug. Matz and Co., Berlin-Schöneberg, Haupstrasse 53, and its price is 160 marks.

"606" COMPANY.

DR. JAMES GOWANS (Broughty Ferry) writes: Two members of a hospital staff have informed me they have been invited to become shareholders in a company having proprietary rights in the sale or manufacture of "606." Though the holding of such shares is not likely to become common in this country, would it not be well to call attention to the serious nature of such an association of doctors with the sale of proprietary remedies?

CRANIOPAGOUS LIVING TWINS.

THE *Berliner Tageblatt* announces the birth, on January 7th last, of craniopagous twins, who were living and well in the last week of March. They are united at the summit of the cranium, so that their bodies diverge almost in a straight line, their united length being a little over 35 inches. As they lie in bed they look about almost intelligently, but neither can see the other. Their movements are not simultaneous, and one may be asleep when the other is crying or moving its hands voluntarily. They were born at Vilbel, near Frankfort-on-Main, of parents of the working-class, and have been brought up by the bottle, and when last seen they had become very well developed. The precise relations of the cranial bones and the brain of each twin are being studied by a Hessian medical association, and the Roentgen rays will be applied at a coming meeting of the Frankfurter Aerztevereins. It is clear that the monster is an instance of craniopagus parietalis, where, instead of one twin being a mere ill-formed cranium, with a trace of a trunk or a limb (craniopagus parasiticus) topping the head of the well-developed brother like a "chignon," both twins are well developed. Blainville noted that in one very ancient case it was observed that one child cried when the other slept. Albrecht's twins lived over three months. A few other cases collected by Ahlfeld were either stillborn or lived but a few hours at the most. Ahlfeld's drawings (Part III, Figs. 5 to 9, in *Die Missbildungen des Menschen*, 1880) represent some of the examples of this monstrosity figured in the monographs which he consulted. Hirst and Piersol (*Human Monstrosities*, 1891) quoted Ahlfeld, but could not add any reports of more recent cases of craniopagous parietalis.

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